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ABSTRACT

The ninth yearbook of innovative learning strategies presents the following articles, grouped in three major sections. The first section, Program Models, contains: (1) "Cooperative Learning in a Study Skills Course" (Corrine Plotkin); (2) "Peer Tutor Preparation: A Guide to Training" (Kathy Carpenter); (3) "A Community College Pre-College Program for Students with Learning Disabilities" (Gregg C. San Nicolas and others); and (4) "A Review of ERIC Documents Relating to Trends in Postsecondary Education for Learning Disabled" (Elaine Cherney). The second section, Strategies, contains: (5) "Focus on Learning with Learning Logs" (Nancy Browning); (6) "You Have Style--Use It!" (Muriel R. Radebaugh); (7) "Charting: A Study Strategy" (Margaret Rauch); (8) "Using Music Lyrics to Teach Reading" (Vivian Taylor and Virginia Gambrell); (9) "Teaching Notetaking in a College Study Skills Class" (Mary L. Dillard); (10) "Using Periodicals to Promote Reading/Writing Competencies and Cultural Awareness" (Edward Dwyer); (11) "Protocol Analysis" (Judith Entes); and (12) "Teaching College Communication Skills and Study Strategies" (Barbara Saunders and Bernice Brown). The third section, Research, contains: (13) "Developmental Learning of Language Arts, Reading, and Study Skills" (Robert M. Hashway and Sandra T. Gamble); (14) "Behavioral Anchoring and Ordering Theory: Bases for Syllabus Design" (Kyle Perkins and Sheila R. Brutten); (15) "Success Indicators of a Reading and Study Skills Course for College Freshmen" (Jane G. Rhoads); (16) "What Do College Students Learn from and about an Innovative Vocabulary-Learning Strategy?" (Joel R. Levin and others); and (17) "Contributions of Empirical Studies to College Reading and Study Skills Instruction: 1975-1989" (Alice M. Scales and others). (MG)

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INNOVATIVE LEARNING STRATEGIES

NINTH YEARBOOK

1989-1990

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INNOVATIVE LEARNING STRATEGIES

1989 - 1990

NINTH YEARBOOK

Shirley A. Biggs, Editor
Terry L. Bullock, Associate Editor
1990

The ideas expressed in the articles included in the Ninth Yearbook
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PART I. PROGRAM MODELS

The program models presented in this section address issues related to cooperative learning, peer tutoring and learning disabled students in the college environment. First, Plotkin describes strategies she used to create opportunities for students to actively participate in class through cooperative learning activities. Then, Carpenter offers guidelines for preparing students to work as peer tutors in a developmental learning setting. The section ends with two articles that address the issue of learning disabled students in college. San Nicolas, San Nicolas, and Morelli describe a community college based program designed to assist students before they enter college. Cherney reviews programs cited in ERIC documents that serve the learning disabled college student and provides an overview of common program characteristics.

Cooperative Learning in A Study Skills Course

Corinne Plotkin
The University of Wisconsin, Milwaukee

Traditionally the lecture format is employed by instructors who teach the two credit study skills course at the large urban university where I teach. Although students may benefit from taking such a course, they are not always motivated by the content to learn as much as they could. Students typically come into the classroom, open notebooks, and passively record what they believe are major concepts. Such exclusive use of the lecture format limits the engagement of the students in critical thinking. Further, it ignores the social aspect of the learning process (Radebaugh and Kazemek, 1989). Students generally do not have class time to share ideas and exchange thoughts on the content being presented.

Several years ago a colleague described the methodology of cooperative learning. Although it is used mainly at the high school and elementary levels, I became interested in using this method in my college classroom. The concepts are in contrast to the "competitive" methods of education in which students are compared and measured against each other. In the cooperative method each student's success in solving problems related to course materials depends on the success of the group (Cohen, 1988).

Would cooperative learning increase motivation to learn in my classroom? Wood (1987) studied the use of cooperative learning in middle and secondary level classrooms. Results from her study indicated that students using cooperative learning scored higher on achievement tests than students learning by other methods. Her work also revealed that there was a higher degree of motivation to learn, a more positive attitude toward instruction, and a decrease of dependency on the teacher. In addition, other reading research has shown the value of reading in dyads for increased transfer of skills through the use of more effective metacognitive strategies (Larson & Dansereau, 1986).

Cooperative learning has not been used extensively in college classrooms. However, some recent research does show that college instructors are seeing the value of incorporating the method into their pedagogy. A study reported by Sherman (1986), in which four introductory educational psychology classrooms were differentially taught, showed affective differences in cooperative and competitive classrooms. There were more negative perceptions in the one individually competitive class as compared to the three cooperative classrooms.

What I needed to consider was whether the basic principles of cooperative learning could be used within a structure that used a variety of approaches depending on the content for a particular week. Dishon and O'Leary (1984) suggest that cooperative learning is based on five principles listed below.

1. The Principle of Distributive Leadership - all the students in the group are capable of understanding and can perform leadership responsibilities.
2. The Principle of Heterogeneous Grouping - groups of students who have different social, cultural, and skill levels provide students with a realistic life experience.
3. The Principle of Positive Interdependence - students can learn to value learning from other students.
4. The Principle of Social Skills Acquisition - social skills can be taught and the group will be more effective because of this.
5. The Principle of Group Autonomy - student groups can learn to complete their tasks with a minimum of teacher input.

There are many strategies for setting up the groups which the teacher can employ.

The principles seemed reasonable to me. I felt I could find a way to incorporate specific small group work into my course. Since the students in my classes included many minority, educationally disadvantaged, and non-traditional students; I felt that the small groups would provide support for students who may not be accustomed to the rigorous demands of a large university community. Research universities are said to provide inhospitable environments for their students. The most prepared and highly motivated students usually adjust; others do not. What is needed in such a setting are support networks, good teaching, and a caring attitude (Richardson, 1989). Envisioning that cooperative learning would enable students to form study groups outside the class, I believed this method would prove beneficial to promoting higher achievement among my students. Because of economic circumstances, many urban students often rush immediately to work after classes. They do not get the opportunity to engage in dialogue with other students in the classroom. Also, I felt that this method would increase the opportunity for students to think critically as they discussed problems relating to the content in their small groups. I believed it would be an active approach that would motivate students who have difficulty with attention to course details. Further, attendance might be increased if the group task had a point value for each session. Finally, students would be working with others who had a different learning style. This would enable individuals to gain insight into other modalities that are used in effective study. Some research provides us with the insight that students who are right brain dominant prefer to learn with peers rather than individually (White, 1988). Thus, I was ready to redesign my curriculum and write my new syllabus.

Curriculum Development

The syllabus was rewritten to provide for ten formal group meetings and as many informal meetings as needed. Units adjust; others do not. What is needed in such a setting are support networks, good teaching, and a caring attitude (Richardson, 1989). Envisioning that cooperative learning would enable students to form study groups outside the class, I believed this method would prove beneficial to promoting higher achievement among my students. Because of economic circumstances, many urban students often rush immediately to work after classes. They do not get the opportunity to engage in dialogue with other students in the classroom. Also, I felt that this method would increase the opportunity for students to think critically as they discussed problems relating to the content in their small groups. I believed it would be an active approach that would motivate students who have difficulty with attention to course details. Further, attendance might be increased if the group task had a point value for each session. Finally, students would be working with others who had a different learning style. This would enable individuals to gain insight into other modalities that are used in effective study. Some research provides us with the insight that students who are right brain dominant prefer to learn with peers rather than individually (White, 1988). Thus, I was ready to redesign my curriculum and write my new syllabus.

Curriculum Development

The syllabus was rewritten to provide for ten formal group meetings and as many informal meetings as needed. Units of instruction were primarily kept the same; however, students were required to keep up with the reading outside of class so that class sessions would involve problem solving based on the background of the readings. I kept group meetings at a maximum of twenty minutes so that the time left could be used for whole-class group dynamics, mini-lectures, audio-visual presentations, guest lecturers, and modeling of specific study techniques. Students were held accountable in the following ways. Cooperative group tasks were worth twenty percent of the final grade. Each student present on a particular day earned the credit that was given for the group's problem solving as a whole team. Since the students did not know when the formal group meetings would take place, they attended regularly. They were also motivated to participate because group members counted on the input of each individual. Sociability was included as a goal of the learning process.

Each formal cooperative lesson plan followed a definite structure so that students could read it easily and complete the tasks. As time went on, groups learned to organize quickly, choose a recorder, and tackle the problem at hand. Each student was given a copy of the Input (lesson plan). However, the recorder had only to give one copy to the instructor for credit (see Figure 1). This lesson plan can be adapted to any content course as well.

I was relieved to find that although I had incorporated a cooperative approach into my curriculum plan, I could still assign individual assignments as needed and give individual tests. Adaptability and flexibility in the use of cooperative learning proved to be the key to increased motivation in the classroom. It became apparent to the teacher that the activities were meeting the prescribed goals week by week so that any necessary adjustments could be made.

Evaluation of Curriculum

Although I teach four study skills sections, the new syllabus was administered to only two of the sections. The new syllabus was only loosely adhered to in the remaining sections. Observations during the first four week unit showed that students were willing to interact with others within and outside of group meetings. There was good attendance and students exhibited a less passive attitude. Class discussions were more often initiated by the students than by the instructor.

Further evaluation revealed improved test grades of students who became more active and interested in course material. Students who were less prepared for college received instruction from group members who had a more extensive background in job- and school-related skills. Of particular note is the fact that students assisted others in individual research projects.

Figure 1

SAMPLE LESSON PLAN

Input #7

Facilitator/Recorder: ______________________________________

Group Members Present: ______________________________________

Task: To select one or more current societal issues and discuss both pro and con arguments.

Objectives:

1. To learn to use critical thinking by realizing there is more than one side to an issue.
2. To decide how you will respond when writing the critical essay completed as homework.

Accountability: In order to receive the two point credit for Input #7 write the essay at home. The base group will act as a sounding board for the possible arguments.

Feedback/Processing:

1. To evaluate arguments on an issue, we need to:

2. Our group had an effective/ineffective discussion today because:

Finally, as the course progressed, there was more interaction between the students and teacher. Even the painfully shy students began to openly question and discuss specific needs.

The overall evaluation of the approach described is based generally on informal observation. In addition, there was interest in seeing how many students remained in the class from the initial enrollment. One section revealed that 94% of the students completed the course while the other section reported 100% retention. A questionnaire was administered to get student reaction to cooperative learning. Over 93% of students from the two sections thought that other University classes should use this methodology. Anonymous student comments revealed the following about group work: (1) it was helpful and instructive; (2) it motivated class attendance; (3) it provided assistance in developing communication skills; (4) it improved comprehension of course content; (5) it relaxed tension; (6) it promoted active participation; and (7) it facilitated student friendships.

My evaluation of the use of cooperative learning in the classroom is not intended to be conclusive. Long term retention data needs to be collected and analyzed. However, the next semester I was confident enough of the procedure to expand it to all four sections. At the end of the semester, the average retention rate of students in the four classes was 95%. A new question added to the questionnaire that semester asked students whether or not they would like to change groups halfway through the course. Only 18% of the students responded "yes"; 82% said "no". Students also suggested that groups within the class interact with other groups, that more time was needed to analyze group task instructions, and that more group interaction was desired for the term paper project. Bearing these ideas in mind, I planned the syllabus for the next semester.

Conclusion

Cooperative learning has added a new dimension to the two credit study skills course. Students show more interest in learning new study methods. They practice critical thinking as they communicate daily and they observe and learn from their peers as they use reasoning to solve study problems. Current student evaluations revealed that individuals learned skills and learned to enjoy active participation in class. Previous student course evaluations showed few such positive reactions. Understandably, I will continue to use and redesign cooperative learning in my study skills classes.

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Peer Tutor Preparation: A Guide to Training

Kathy Carpenter
Kearney State College

Individual and group tutoring is usually an important part of organized academic assistance programs on college and university campuses in the United States. Most learning centers or academic assistance centers (the units or programs on postsecondary campuses specifically designed to improve learning skills and achievement) offer tutoring for those students who are engaged in learning center activities. Furthermore, learning centers usually also provide content area tutoring (Beal, 1980; Clymer, 1978).

Importance of Tutorial Support

Research indicates that the availability of tutorial assistance is one indication of a strong academic support effort. Based on her experience working with developmental students as well as her own review of the literature, Maxwell (1979) recommends that effective learning assistance programs include tutorial services.

Roueche (1983) conducted a national study of how colleges and universities respond to underprepared students. An analysis of the results of the study sought to identify elements of programs common to institutions that reported the most positive outcomes. College and university skills development programs that reported the most complete and encouraging retention data seemed to have eleven elements in common, and one of the eleven elements was the use of peer tutors. Roueche determined that in these successful programs peer tutors are used extensively as support personnel. They are selected on the basis of performance criteria and faculty recommendations, receive preservice and continuing training, and are evaluated regularly.

Training Tutors

Developmental educators know that prospective tutors need training if they are to perform effectively. However, many times those who are responsible for a tutor training program are unsure of how many hours should be devoted to training tutors, what methods or modes can be used to teach specific strategies, and just what information and activities are essential and which are less important.

The Tutor Training Certification Board of the College Reading and Learning Association (CRLA), formerly the Western College Reading and Learning Association (WCRLA), demands a minimum of 10 hours of training for regular certification, 20 hours of training for advanced certification, and 30 hours of training for master level certification. These criteria were established after surveying numerous successful programs and conferring with developmental educators known to have directed successful tutoring programs for several years.

The board also recognizes the need to utilize more than one method or mode of training. They require classroom or workshop instruction plus a combination of tutor training videotapes, individual or small group conferences with supervisors, special tutor projects, or other training activities.

Definite topics should be fully covered prior to tutorial activities if the program is to build a reputation of competence. First of all, the philosophy and ethics of the tutor program should be fully explained, followed by a definition of tutoring and the tutors' responsibilities. The preferred method of record keeping and documentation should be fully covered and demonstrated so that all tutors understand the required procedures. Evaluation of a tutor program is nearly impossible unless all tutors keep accurate and complete records.

Basic guidelines for tutoring should be fully covered, and these should include a rather thorough list of tutoring "Dos" and "Don'ts." For instance, do always get complete addresses and telephone numbers from your clients in case you need to contact them about appointment changes, and don't complete assignments for your clients, rather assist them so they are able to do the assignments themselves.

Next, techniques for beginning and ending tutoring sessions can be covered, followed by a lesson on planning individual tutoring session activities and assisting the client with setting both short and long term goals. Modeling and role playing are particularly effective for demonstrating and practicing a variety of tutoring techniques and can be used extensively in most tutor training activities.

Effective communication skills will enhance any tutor session, and training in these skills will better enable tutors to assist their clients. Nonverbal communication or body language will telegraph how interested the tutor is in the client, and tutors need to understand the importance of eye contact and other visual indications of attention. Questioning skills need to be demonstrated and practiced so that tutors feel comfortable in their abilities to ask open-ended and probing questions designed to ascertain the difficulties their clients need to resolve and assist them in understanding concepts. Active listening and paraphrasing activities will allow tutors to rehearse responses which will lead to a clearer understanding of what their clients want and need.

Instructing prospective tutors in methods for teaching a variety of study skills will enable them to tutor clients involved in learning center classes and will also enable them to help students who come for assistance in a content area. Knowledge about efficient textbook reading strategies, notetaking techniques, test taking procedures, and time management planning will enable tutors to assist their clients in enhancing their study skills.

It's important for prospective tutors to learn to put themselves in their clients' positions, to "walk in their shoes." This is called empathy. Clients will come for tutoring because they are frustrated, they cannot understand essential concepts, and they are seeking help. If tutors can empathize with their clients' needs, they will be more effective. Tutors need to visualize themselves grappling with this most difficult subjects to help them develop empathy for their clients. If they can recall frustrating learning situations from their own experiences, they will be better able to understand and react appropriately to their clients.

The final topic which should be covered for preservice tutors is referral skills. Tutors need to be aware of the services available on campus, the location of the office responsible for each service, and the name of a contact person. They also need practice in making tactful referrals. If specific problems seem to be interfering with the client's ability to concentrate, the tutor should refer that person to the appropriate office. Financial problems might call for a referral to the Financial Aids office, while problems with relationships might better be examined in the Counseling center.

A concise summary of the previously discussed topics which can be covered in preservice training is as follows:

A. Philosophy and ethics of the tutoring program
B. Definition of tutoring
C. Tutor responsibilities
D. Record keeping and documentation

E. Guidelines for tutoring

F. Tutoring Dos and Don'ts

G. Techniques for beginning and ending sessions

H. Planning session activities

I. Goal setting

J. Communication skills

    1. nonverbal communication
    2. questioning skills
    3. active listening and paraphrasing

K. Study skills

    1. textbook reading strategies
    2. notetaking techniques
    3. test taking procedures
    4. time management planning

L. Empathy training

M. Referral skills

It is recommended that a minimum of ten hours be spent on the above topics before tutors begin assisting clients. However, most supervisors have found it nearly impossible to adequately cover these topics even in that amount of time unless the prospective tutors have had advance preparation. If reading material is provided beforehand, preservice tutors can learn about many of the skills themselves and use actual training time in role playing and other learning activities. Allowing prospective tutors to study materials covering desired topics prior to the actual training experiences saves time, enhances comprehension, and facilitates competence.

Tutorial Resources

Several individuals responsible for tutor training at their institutions have written training handbooks which cover most, if not all, of the above topics. Gier and Hancock (1985) wrote an excellent manual entitled Helping Others Learn: A Guide to Peer Tutoring. Carpenter (1989) received permission to utilize some of their materials and supplemented what they had written with additional ideas and techniques in The Tutor Handbook: Bridge the Gap to Understanding. Kita (1989) presented her training ideas at the College Reading and Association convention in Seattle and organized her materials in a manual, A Model Tutorial Service and Tutor Training Program at Windward Community College. NETWORKS, a group headquartered at Bronx Community College compiled Critical Issues in Tutoring to assist in the training of tutors.

Some groups have also developed excellent video presentations which aid in tutor preparation. Chemeketa Community College made Tutor Training Series, a two-part series, which includes both listening and questioning techniques and provides handouts which encourages tutor participation. Probing Skills from the University of California also allows tutors to practice the questioning skills modeled in the video.

Many successful tutorial programs require that prospective tutors attend a week-end tutor retreat, attend a specific number of workshops or classes, or complete a quarter or semester tutor training class before they begin their tutoring duties. After the initial training, tutor supervisors try to review and supplement the information previously taught.

Throughout the school year, supervisors introduce new topics in regularly scheduled training sessions to increase tutor expertise. Some of the topics covered in the more advanced training are:

A. Handling difficult situations
B. Learning disabilities
C. Critical thinking skills
D. Problem solving techniques
E. Assertiveness training
F. Characteristics of adult learners
G. Identifying and using specific learning modalities
H. Cultural awareness and inter-cultural communications
I. Administering and interpreting a Learning Style Inventory
J. Group management skills
K. Training and supervising other tutors

Summary

Being responsible for a tutor training program is a difficult task that can be made more manageable by determining: (1) the range of information which should be covered, (2) the skills to be taught prior to tutoring, and (3) the skills that can be learned as part of ongoing training. Disseminating information for prospective tutors to study prior to actual training sets the stage for productive training sessions. Setting goals for each training topic and structuring the training sessions will help assure that all tutors become proficient in the desired skills. Carefully trained tutors can facilitate learning for clients, elevate the reputation of the tutorial program, and enhance the total academic offerings of institutions willing to invest in them.

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A Community College Pre-College Program for Students With Learning Disabilities

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The success rate of pre-college programs aimed at providing support services for economic and academically disadvantaged youths has been well documented (Mangrum & Strichart, 1985). Pre-college programs such as ACT 101 have prepared disadvantaged youths for the complexities of the college experience throughout the country (Seidenberg, 1986; Seidenberg, 1987; Pennsylvania Higher Education Equal Opportunity Act, 1987). These programs have continued in many colleges and universities and have eased the transition from high school into college for students who generally need to develop the preparatory skills or competencies to tackle the regular college courses upon enrollment.

In recent years, service providers in postsecondary institutions have experienced enrollment of disabled and/or handicapped students in college (Griffey, 1986; Mangrum & Strichart, 1984). Many service programs were developed to provide academic and psychological support for these students in the hope of helping them make the necessary adjustments in their regular term courses. Increased attention has been placed primarily on college students with identified learning disabilities (Dollahan, Jacobs, Jaeger, Davis, & Marici, 1986). This group comprised the largest entering groups of students who have disabilities and other handicapping conditions and who were entering college for the first time.

Previously, learning disabled (LD) students were provided the necessary support services at the college level, but they still continued to experience difficulties of rigorous college life and thus, frequently performed poorly in their first term courses. Although these students did not necessarily identify themselves as disabled or handicapped when they enrolled, they often admitted to their problems as they matriculated in their first term course work and experienced the difficulties in meeting the requirements of their regular term classes.

College service providers long have recognized the need to develop transitional programs for underprepared youths so that they can meet postsecondary institution requirements. They have recognized that an early intervention strategy would probably reduce the anxieties of students and the need for constant and intensive support as they move toward graduation.

The Community College Pre-College Program for Students With Learning Disabilities was designed to meet the need for early transitional support services. Its purpose was to address such problems as inadequate study skills, poor writing abilities, inefficient use of time, and failure to use available support services.

Other problems that the staff identified as important to address in the program, included a lack of appropriate social skills, few learned strategies to cope with class requirements, and emotional instability. These academic and psychological difficulties were determined to be exacerbated by a lack of adaptive and compensatory skills in self-organization and maintenance of controlled study habits. The staff believed that learning these skills and habits could enhance the LD students' ability to perform successfully within the context of regular term courses and to fulfill the standard requirements imposed upon them (Griffey, 1986).

Program Development

In the spring of 1987, the pre-college program curriculum was developed by staff in the Special Services Office and was titled, "Achieving Success and Knowledge (ASK)." This title was used to help promote the idea of assertiveness in the participants. Teaching and instructional activities were designed to help accommodate the individual academic and psychological needs of the new incoming LD students at the community college.

A total of 40 or more instructional hours were built into the program. Instructional hours were divided into nine pre-requisite summer courses which included: (1) Assertiveness Training; (2) Social Realities; (3) College Study Skills; (4) Introduction to the Microcomputer; (5) Campus Orientation; (6) Rights and Responsibilities; (7) Critical Thinking Skills; (8) Career Decision Making; and (9) Individual Counseling. Instructional and support staff hoped that the new LD students would develop adaptive strategies and other compensatory skills that would enable them to successfully make the academic and psychological adjustments necessary for successful performance in their term classes.

Target Population

In cooperation with various high school counselors and referring agencies such as the Association for Children With Learning Disabilities (ACLD) and the Office of Vocational Rehabilitation (OVR), college bound LD students were solicited for participation in the pre-college program. Funding for tuition, books, and supplies was provided by multiple sources. These included the referring agency, the community college, and the participants.

Learning disabled students who participated in this first pre-college program ranged in age from 17 to 30 years with most or 67% of them in the 17 to 19 year old category. The participants had adequate documentation of their learning disabilities and the types of academic and psychological programming previously received. These data were obtained through high school records and Individualized Education Plans (IEPs). Some of the participants held jobs. A few had not completed their high school program. One participant was on the verge of completing high school. An older participant had been out of school for several years and decided to come back to seek other opportunities at the college.

The initial intake interviews and advisement sessions were conducted by the community college's LD Specialist who determined academic and psychological strengths and weaknesses. In addition, the LD Specialist administered an informal learning style assessment to each participant to determine other learning patterns and habits. Before the program started, most of the participants met with their instructors as part of the introductory procedures. These meetings were designed to help lessen the participants' psychological anxieties about their first term college experience.

Program Implementation

The pre-college program was conducted at the community college for four weeks from mid-July to mid-August in the summer of 1987. At that time college reports indicated that LD students at the community college comprised an estimated 1.3% of the 11,000 total student enrollment. The Special Services Office hired two instructors experienced in counseling, psychotherapy, and teaching students with learning disabilities at all levels.

The pre-college participants attended classes for two hours each day for four days each week. In addition to the two hours of course work, students were provided eight more contact hours of one-on-one counseling with either their instructors, service providers, the LD specialist, or other support service staff within the Special Services Office.

In these counseling sessions the service providers discussed and helped interpret student rights and responsibilities, oriented the participants about campus auxiliary support services other than those provided at the college's Special Services Office, introduced the participants to other services offered at the College Learning Center (CLC) including individualized tutoring, and discussed personal problems related to their college experience including some suggestions for solving problems. The participants were also introduced to the variety of adaptive, compensatory and supportive services provided by the office staff and professional personnel. These support services included academic advisement, note-taking, taped textbooks, program registration, and individualized tutoring.

The two instructors kept the scheduled times for classes fairly consistent. Both alternated the teaching of particular subject content areas between themselves so that both had taught all the content areas by the end of the program. This strategy was used to help provide a college setting atmosphere for the participants and to observe the effects of different teaching styles and instructor personality on student performance.

The instructors made every attempt to maintain constant contact with the participants on a daily basis. They discussed assignments and other problems that students experienced. Several informal consultations between instructors and the support service staff were held throughout the duration of the program. These informal consultations were helpful in keeping abreast with those students who sought more help from the office staff than from instructors.

Program Evaluation

Service providers at the community college were also concerned about the effectiveness of the pre-college program. As the program was a first for learning disabled students, the Special Services Office professional staff wanted to determine if the participants learned those skills necessary for successful college adjustments. A survey questionnaire was developed to address this issue.

Service providers also wanted to identify modifications that would be necessary if the program was to continue the next summer. Their main concern was if the pre-college program met most of the unique needs of the participants. Thus, in meeting the needs of the participants, they hoped that students would be successful in their first term courses at the college.

Because no evaluation measures were obtained prior to enrollment in the pre-college program, it was necessary to design the survey items to allow students to respond to THEN and NOW statements about their feelings and attitudes before and after attending the program. Some of the survey items were questions and statements that were aimed at helping the participants think about their disabilities, their feelings towards their courses, and how they thought the program helped them in preparing for college life.

Service providers developed a total of 35 survey items. There were 26 parallel THEN and NOW statements (e.g., "Before I attended the ASK program, I felt confident about my study skills;" and "The ASK Program helped me gain confidence in my study skills"), 8 open-ended statements requiring written responses, and one item which asked participants to rate the overall effectiveness of the pre-college program. The items developed for the survey questionnaire came directly from each of the content areas taught during the sessions and were worded in a way that required the participants to evaluate their understanding about how they perceived their skills and disabilities.

The participants were asked to rate each item from 1 to 5 on a Likert-type scale. The instructors read each item orally and provided clarification for the participants when they requested it. After the participants completed their surveys, they were scheduled for individual interviews by the instructors. Item means then were computed.

Results

When the results were examined, it was clear that the participants in the pre-college program felt better about entering college for the first time. Most of the means (77%) for NOW items were higher than the means for THEN items. The overall impression was that the participants had developed positive and accepting attitudes towards their own disabilities and toward attending college for the first time. The majority wanted to continue to tackle the college lifestyle and the rigors of academic performance in college.

Information gathered from written responses indicated that students recalled most of the information taught including the distinctions made between a choice and a decision. This was particularly interesting as this was the concept found to be most difficult in teaching to the participants. This concept was introduced to help the participants gain more self-directed skills in attaining their goals while at the college.

The service providers, however noted that most of the participants had incomprehensible handwriting requiring instructors to make corrections in the interviews as the students were asked to clarify some words or sentences that they had written on their surveys. Most of the participants noted that they were anxious to enroll in the Fall term since they would be able to use the microcomputers for their writing assignments at the college. Thus, many were not worried about illegible handwriting because they looked forward to typing their assignments into the microcomputer. The microcomputer was introduced to the participants but was not used during the pre-college program.

Additional information gathered from interviews revealed participants' concern about written requirements and problems dealing with instructors on a personal level. On the positive side, they indicated that they liked the small classes and the opportunities they had for discussion with instructors. They also reported that they learned a lot about campus resources from the scavenger hunt activity, enjoyed role playing as a mechanism for learning to make decisions and appreciated the opportunity to make new friends who had problems similar to their own.

The final question in the survey questionnaire asked students to rate the overall effectiveness of the pre-college program. Results of the overall mean rating indicated that most participants felt the program was very effective in helping them to learn more about the necessary skills for making the difficult transition into college. The mean rating for program effectiveness was 3.8 on a 5 point scale. Almost all participants viewed the program positively and strongly recommended that it be offered to other incoming LD students.

Discussion

The evaluation data taken from the survey responses and the individual interviews of the LD students who participated in the first pre-college program at the community college strongly suggest that LD students can make the necessary adjustments into the college life. They developed their academic and psychological skills by participating in all the activities required of them in their summer classes. They became aware of their rights and responsibilities and were able to assert them as necessary during their introduction to others. Many felt confident that they could make appropriate choices and decisions about what they wanted to achieve in college. More importantly, the participants felt good about their initial college experience and acknowledged that they anticipated everything would work out for them in the future.

Overall, the LD participants increased their self-confidence as observed through their behaviors in: (1) completing assignments, (2) finding their way around campus, and (3) making appointments to see individuals who were available to assist them. Their early apprehensions about attending a postsecondary institution without guided help were significantly reduced. Still, many participants continued to worry about the sensitivity of future college instructors. They worried that instructors might not understand their needs and might not be willing to make the necessary adaptations that often help to prevent failure.

Other survey and interview data indicated that the program was very helpful in increasing students' insights about their specific learning disability and the conditions under which their disability was the most profound. They became more aware of the available long term support services for college students. This was especially helpful as students were very concerned about what would happen if the special services were no longer provided by the college.

Much was learned about useful strategies. One of the best instructional strategies for working with these LD students in the pre-college program was the smaller size instructional groups. Students in general were more assertive in their questioning strategies for specific information and they exhibited self-confidence in taking control of their learning situations. They were able to listen attentively and monitor the direction in which class discussions were moving at a higher frequency than what the instructors had expected. The participants also were able to freely discuss their own disabilities within the smaller groups and they were able to identify the most difficult skills to acquire during their learning experiences.

Another instructional strategy that worked well was the role-playing exercises presented in the classes. During these activities, the students were able to learn specific strategies to deal with their peers and significant others in their academic and social situations. Role playing realistic situations about work and school situations helped them to understand the complexities of their current lifestyles and ways of changing or improving their conditions. Although the LD student participants were presented hypothetical simulations, they were able to generalize and identify similarities and differences with their own situations through the many discussions.

Perhaps the most effective strategy that increased learning outcomes was the individualized counseling sessions. Within these sessions, individual students were able to express personal concerns and fears about their eventual enrollment at the college. Some expressed concerns that they may not get enough individual attention in many aspects of their college experience. Others feared that their reading and math abilities were not adequate to tackle the regular term courses. A high degree of uncertainty about whether term instructors would provide more time for taking tests and completing course assignments seemed to prevail within these counseling sessions.

Conclusions

This program description and evaluation provides a look at attitudes and perceptions of LD students enrolled in a pre-college program who were potential candidates for regular Fall enrollment at the community college level. Individual interviews and observations indicated that the pre-college program curriculum was effective in encouraging LD students to enroll and to examine their abilities and skills before they entered college in the Fall semester.

In general, the pre-college program provided many helpful tips for college bound LD students. The program was run again in the summer of 1988 and was considered to be very successful by both students and staff. At this time a Group Dynamics course was added to the content curriculum. Training in the use of the microcomputer was provided to the students, and provisions were made for faculty consultations.

Service providers now have "blocked" regular developmental studies courses such as English, Math, and Reading specifically for LD students during their first year in the regular community college program. They have hired instructors who have experience in special education to teach first year courses for LD students. These instructors are now teaching in the blocked program and have designed each content area to meet the unique needs of these students.

While this initial effort showed positive effects, follow up research into the attitudes and adjustments of these LD students is necessary. Presently, staff at the college is planning to determine the full effects of the pre-college program on the original participants by analyzing rates of program completion, graduation from college, and eventual employment in the community.

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A Review of ERIC Documents Relating to Trends in Postsecondary Education for Learning Disabled Students

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The complexities involved in working with learning disabled (LD) students in postsecondary education are myriad. As DeRuiter and Wansart (1982) indicate, "learning disability cannot be easily defined, evaluated, diagnosed or remedied because the symptoms of the problem frequently overlap with other disorders, occur in varied combinations and may be given different names by practitioners and theoreticians" (p. 1). Indeed, one of the fallouts of the vague characteristics has been the use college students have made of the symptoms to infer that their grades have been below par because they have a learning disability. In the past several years, we have seen much greater concern regarding the services our university can provide learning disabled students. Therefore, I decided to review the documents in ERIC from 1980 through 1988 to see what current issues are emerging in discussions regarding learning disabled students in post-secondary education.

The ERIC documents that discussed issues related to learning disabled students in post-secondary education fell into four categories: (1) development of programs, (2) personnel and administration, (3) transition from high school to college, and (4) learning strategies for students and teachers. The review substantiated my perceptions that while there is a broad concern for the learning disabled population in post-secondary education, there is certainly no consensus about the most effective way to meet their needs.

The Development of Programs

Hughes and Brewar (1985) provide an overview of issues and concerns that are faced in providing programs for learning disabled students in post-secondary education. A major problem is that of definition. Hughes and Brewar suggest that there is a need for more precise identification so that there is a way to separate low achieving students from those who are learning disabled. In 1981 the National Joint Committee for Learning Disabilities developed a definition that reads:

> Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical disorders. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g. sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g. cultural differences, insufficient, inappropriate instruction, psychological factors), it is not the result of these conditions or influences. (p. 8).

The writers suggest that the true test of a learning problem may be its persistence. They also suggest that successful programs for learning disabled college students have certain common characteristics. These include the capacity for differentiated testing for admission, the provision of a variety of learning strategies, and a competent administrator to get the program going and to make it work.

One of the most comprehensive looks at services and programs for learning disabled college students was a document based on a survey completed by California Community College respondents. The summary of the final report of the survey indicated that the most common area of difficulty for these students was reading (Ostertag, Pearson & Baker, 1986).

Njorlander and Czajkowski (1986) describe the University of Connecticut programs for their learning disabled population. Their paper describes the initiation of their program and delineates the goals, objectives and accomplishments of the two year project. The overall evaluation of the program revealed that the support group for the learning disabled students was very successful. An important recommendation made was that in faculty in-service should be increased.

Neault (1983) reviews two LD programs. One is at Colorado State University which began in 1978, and the other is at Southwest State University, Minnesota. She suggests that a program for learning disabled college students should include the academic, social/emotional, and vocational needs of the students. Additional papers along similar lines include those by Andrews and Gregoire (1982) and Fischer and Page (1984).

Kanter (1986) provides an informative overview of the concerns and problems of learning disabled students in college and some characteristics of programs that serve them. She defines learning disability and discusses the difference between accommodation, intervention and remediation. Her discussion emphasizes the fact that deficiencies in cognitive processes are not cured in an LD program. I believe that this is an important point to keep in mind when establishing a college program for learning disabled students.

Teaching and Learning

The articles related to issues of teaching and learning deal with writing, software selection, and general suggestions for instruction and counseling.

Brown (1981) discusses ways in which colleges and universities can accommodate the learning needs of learning disabled students. His suggestions include: allowing tape recorders in classes, providing notetakers, allowing for alternative testing provisions and special counseling in the area of social skills. In the same vein, Seitz (1983) describes factors that may signal a learning disability, provides a glossary of terms, and recommends strategies for college teachers to use with learning disabled college students. She also advises that the students work through their learning strengths and develop work habits based on highly structured routines.

Kenneth Briggs (1982) has written a reference article for teachers seeking strategies to use in the classroom to accommodate learning disabled students. The article describes activities used in his health class. However, the recommendations can also be modified to use with other classes.

Some articles include a discussion and description of software available for use with learning disabled students in college (e.g., Ostertag, 1985; Robledo, 1987). The authors of these articles indicate that a variety of programs do use computer assisted instruction at the post-secondary level. They recommend that any software that is used needs clear and simple instructions for use, a menu that is coherent and easy to follow, and an audio component.

Siegel (1986) studied the writing patterns of learning disabled college students and those not diagnosed as learning disabled. He pointed out that learning disabled college students need to be made aware of how language works. Siegel's recommendations included using guided composition, sentence combining exercises, and word processing.

Finally, one of the major attempts to analyze the impact of the use of microcomputers with learning disabled college students was the Learning Disabled College Writers Project of the University of Minnesota (Collins & Price, 1986). This was a three year federally funded program that attempted to shed light on the writing processes of learning disabled college students with special emphasis on the use of technology. The authors conclude that the use of microcomputers can have a positive impact on the attitudes and performance of learning disabled college students.

Personnel and Administration

Shaw, et al. (1986) points out that "the paucity of skilled and knowledgeable leadership personnel for post-secondary learning disability programs is a critical limitation to the development of this area of special education" (p. 1). The article describes the competencies needed for leadership in this area and then looks at the pre-service and in-service training at the University of Connecticut's learning disability college doctoral training program. The writers cite from the 1984 U.S. Congress Education of the Handicapped Amendments that in many instances secondary programming for the learning disabled is poorly planned and inappropriate. They note that only "9% of the college disabled student services personnel who generally have the responsibility to develop and administer these programs are trained in special education" (p. 5). The competencies needed for faculty involved with post-secondary learning disability programs include: the ability to identify learner needs, develop student skills in learning, provide remedial and compensatory instruction in skill areas, implement tutorial support in subject areas, provide appropriate learning accommodation and develop an array of social, emotional and career supports.

In 1981 the National Joint Committee on Learning Disabilities issued a position paper stressing the need for in-service programs for service providers. The position paper outlines six basic considerations for implementing an in-service and recommends that all in-service needs be evaluated for both short term and long term results. Another article (Matusky, 1981) outlines a basic in-service program. In the same vein, LeFebvre (1983) offers some helpful guidelines about how to interpret the WAIS-R scores and some personality variables of the college learning disabled population.

The need for faculty training to work with the learning disabled is emphasized by Schmidt (1983). He cites the importance of faculty understanding the problem and having strategies to use when assisting students.

Transition from High School to College

Because it is not unusual for learning disabled high school students to receive fairly high levels of support from a resource teacher or a learning center, many of the learning disabled students have a somewhat unrealistic view of the levels of support colleges normally provide. Thus, the transition from high school to college can provide a major jolt for these students. There were three articles in ERIC relating to the transition from high school to college.

Pearl Seidenberg (1987) suggests that the transition phase for learning disabled students from secondary school to college cannot be accomplished in one step. Rather, she describes a three stage process that includes high school instruction, planning for transition and placement into an appropriate college program. The second article by Seidenberg and Koenigsberg (1986) discusses the results of a survey comparing the perceptions of high school and college faculty regarding the characteristics and preparatory needs of secondary learning disabled students. The results of the survey indicated that both high school and college teachers agreed on the characteristics and preparatory needs of secondary learning disabled students. The final article by Aase and Price (1986) verifies that there is a dearth of research in this area. The paper describes a three-year federally funded transition study at the University of Minnesota-General College.

Conclusion

The review of the ERIC documents related to trends in postsecondary education for learning disabled students revealed that the major issues of concern involve program development, teaching and learning, personnel and administration, and the transition of students from high school to college. Further, ERIC document writers determined that (1) learning disabled students can succeed in post-secondary education with proper academic support, (2) there is a need for qualified personnel to administer and teach in the programs available, (3) instruction includes the use of technology as well as clearly structured learning strategies, and that (4) transition programs are needed to help bridge the gap between high school and college.

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PART II. STRATEGIES

Strategies offered in this section for teaching and learning at the college level include the use of learning logs, learning styles, song lyrics, structured notetaking, magazines and other periodicals, the students' own thoughts, and a variety of communication-based activities that promote critical thinking. First, Browning describes ways to enhance learning by having students monitor their progress in reading class by keeping a log. Then, Radebaugh urges readers to take advantage of their personal learning styles to improve academic achievement. Rauch demonstrates the use of charts as a strategy for organizing information to be learned. Taylor and Gambrell follow with suggestions for using song lyrics as relevant reading material for developing comprehension. Next, Dillard offers the reader a detailed sequence for teaching a notetaking strategy designed to improve student reading and testtaking. Then, Dwyer describes the use of periodicals as a way to enhance reading and writing as well as cultural awareness. The examination of think-alouds as a strategy for assisting students as they try to make sense out of difficult-to-read text is described by Entes. Finally, Saunders and Brown conclude the section with a description of a variety of strategies that develop the communication skills needed for successful college learning.

Focus on Learning with Learning Logs

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When I ask the students in my Reading/Study Skills class why they are attending college, the majority usually answer that they need the education to get a job. Several might point to pressure from parents, or to the fact that a degree is an especially prized goal, since many of my students are first-generation college students. There might be one student in the class who indicates that a desire to learn has compelled him or her to seek a college education.

Distressed that most of my students did not rank learning as their first priority, I had nonetheless consoled myself that they would learn in my class. It was only recently that I decided that if their learning was my first priority, then I needed to do more to demonstrate to my students that they were learning in my class.

My college freshmen now keep a Learning Log to help them monitor their learning and their progress in the Reading/Study Skills course. There are several reasons why I chose to introduce a Learning Log specific to this course. In the past, I had successfully used a study journal, where students wrote about problems and solutions with regard to any four courses in which they were enrolled. Unfortunately, many students did not choose to write about the reading course, thereby leaving me without useful feedback. When I heard

Yetta Goodman (1988) speak at a Teachers Applying Whole Language (T.A.W.L.) conference about learning logs as a form of evaluation for elementary students, I decided that this format would enable my students to monitor and evaluate their own learning, and would enable me to gain the feedback I required.

Benefits of Learning Logs

In addition to providing the instructor with needed feedback, Learning Logs provide the following beneficial outcomes:

1. They allow for metacognitive reflection. Metacognition is needed by good readers, successful learners, and strategic thinkers (Snowman, 1989; Weinstein, 1987).
2. They demonstrate to students that they are indeed learning. This is particularly critical in developmental courses, since students may resent being place in such courses, and may therefore resist learning.
3. They permit students to connect actions with their consequences; as they see that positive actions usually have negative consequences. For example, students who had missed class invariably wrote about how far behind in their work their absence made them.
4. They enable students to solve their academic problems, which is in itself the highest form of mastery of "study skills." In doing so, the Learning Log assignment encourages the generation of multiple solutions and

suggestions, thereby promoting critical thinking. Research supports the cyclic nature inherent in the form of the logs, which require the student to be in control so that he or she may "plan, execute, evaluate, and modify" his/her actions (Weinstein, 1987). The emphasis on personal decision making is critical in that it will help to improve the at-risk students's thinking performance (Levine, 1989) and it will enable students to contribute positively to society (Raths et al., 1986).

5. They allow for a written dialogue with the teacher. Thoughts that might never be voiced, especially complaints and questions, can be written with relative impunity (Bode, 1989). In order to promote thinking, the teacher must establish a climate that demonstrates acceptance of student thought (Raths et al., 1986).

By providing students with a vehicle through which they can think and write about their academic progress, Learning Logs enable students to become more successful independent learners.

Weekly Use of Learning Logs

Every Friday during the last ten minutes of class, students reflected upon their week in reading, as they wrote their Learning Log by following the specific format shown in Appendix A. When students analyzed what they had learned, some wrote of specific reading strategies, some wrote about information we had covered (such as the fact that they abort female fetuses in India, which they had read about in Newsweek) and some wrote about learning incidental to that which had been taught (such as how hard it is to tour with the choir and maintain grades).

Student problems ranged from personal to school-related, encompassing everything from suspected cancer, to being rejected by one's girlfriend, to confusion about assignments, to being late for class. Students who were not experiencing problems were required to reflect about the reasons for their success. This enabled all students to view the logical and natural consequences of their actions.

In the section related to suggestions, students could provide me with feedback about my teaching, through a relatively risk-free medium. The most frequent suggestion was to give less homework, a suggestion which most students posed tentatively, by placing a smiling face next to it, or by prefacing such a remark with something like "I know you're just trying to help us, but ..." Actually, I found it quite comforting to know that the students realized that all of the work was intended to benefit them.

This section was also intended for students to suggest multiple solutions for their problems. One student who had identified her problem as being a procrastinator wrote: "From now on I will try not to procrastinate. I will do things right then and there." While this may not seem to be a remarkable conclusion, it is evidence that this student is honestly appraising her situation and devising a logical solution. Even if she does not initially follow through on her suggestion, as many procrastinators may not, she now is aware of how to analyze her academic problems. If her problem continues, she will be able to recognize it and know how to develop an appropriate solution.

In the final section, students reflected upon the week and how it related to the past. Making connections about their performance, while they were also being encouraged to make connections in their reading, made this a particularly valuable experience. Students wrote about how an individual conference with me had helped them to improve their grade, how they had been coming to class on time, or how they found themselves reading more in their spare time. One student commented about how her papers were not late, as they had been previously, noting that this was true even though the Learning Log itself was late that week. Certainly, students were evaluating and making decisions based upon such evaluations.

Analysis Using Learning Logs

At the end of the semester, students were required to look back at the entire semester aided by the records in their Learning Logs, and to make some final evaluations about their learning, their performance, their future, and the assignment itself (See Appendix B). Every student wrote about learning that had transpired, and many wrote of several lessons that had been learned, including their perception of "the most important thing" that they had learned. One student wrote: "I understand that obtaining knowledge takes more than just going to class and relying on my teachers. This responsibility belongs more to me than anyone else."

In response to an evaluation of her performance, one student honestly stated: "When I took the tests, I didn't take them serious(sic) because I felt that they were difficult so I didn't try." When she translated this into a suggestion for future semesters, she wrote: "What I need to do to help myself is try not to give up on hard things like I did on the practice tests." Many students included the suggestion that they should read more in the future. One student responded: "I would do a lot more than doing my work. I would try to see the point in doing it."

I was both pleased and somewhat amazed that all of my students wrote that the Learning Logs were beneficial and that I should continue using them with future classes. "The Learning Logs were helpful because it gave me an evaluation of my performance that week. If I didn't learn much then I worked harder the next week." Students discussed such benefits as being reminded of things they had learned that they might otherwise have forgotten, seeing connections with other classes, and being able to solve their problems.

One student wrote: "As I look back on past logs, I can say that I wasn't just in the class for attendance or the grade, but I really did accomplish many goals in Reading

100C." I believe that many students shared this view, and that the Learning Logs helped to make students aware of their accomplishments in reading class.

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APPENDIX A

Learning Logs

Rationale: The purpose of the learning log is to help you monitor your progress in this reading class.

Procedure:

1. Every Friday the learning log will be due. It should be kept in a folder with the daily writings, or in a separate folder.
2. Date and number each entry.
3. Entries will be graded upon content, and not on spelling or grammar. Detailed, thoughtful papers will be regarded most highly.
4. Every week you will look back and report on your progress and problems in this course. Your paper should have the following subtitles, each of which should be addressed each week:
   a) What I learned: This section should cover anything you learned because of this course, including strategies or skills, knowledge about the world, insights into yourself, etc.
   b) Problems: This section should discuss any problems you had in the class, and it should suggest reasons why you had these problems. If you had no problems, state that, and write about why you did not have problems.
   c) Suggested Changes for the Future: This section should list potential solutions to any problems stated in the section entitled Problems. But it should go beyond any existing problems to suggest changes in your behavior and/or changes you think that the instructor should implement. If you do not suggest changes, you should give reasons why things should remain as they are.
   d) Report and Comparison: This section should report on and evaluate the changes you have made based on previous writings in the section Suggested Changes for the Future. It should compare your performance and feelings, and should give reasons for any differences.
5. The final learning log will summarize the entire semester in the reading class, and will be explained in a future handout. It should be more detailed than the one week entries, and will be worth more points.

APPENDIX B

Instructions for Learning Log Summary

Look through all of your learning log entries for the entire semester. Then do the following:

1. Write a brief summary (one-half to one page) of what you learned in this course. You may add items that you did not report in previous logs. Try to think about the most important things you learned.
2. Evaluate as honestly as possible your performance in this course. Write a brief summary of problems you had in this course, including why you had these problems, and what you did about them, discussing which solutions worked.
3. Based upon what you have learned in this course, write suggestions for yourself that would help you in the future, in terms of studying, reading, or anything!! (Note: Suggestions about how to improve the course will go on another paper.)
4. Briefly evaluate the "Learning Logs" as an assignment. Were they helpful? (Why or why not?) Should we have done them less frequently? ETC.
5. Turn in all of the above along with all learning logs for the semester.

You Have Style -- Use It!

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Every quarter students bring up the same questions. You concentrate better if you get away from the dorm and go somewhere quiet, don't you? Is it better to study with music or without it? Don't you learn more if you study alone than if you study with a friend?

Heated discussions would result from students' questions, with each student trying to convince the rest that her or his point of view was correct. My conclusion, which seemed a lame response even to me, was that the best study environment didn't seem to be the same for everyone.

Later I learned that research is available to support my conclusion (Dunn & Dunn, 1978). Work with learning styles, most often implemented in K-12 school systems, suggests that learners do differ in their requirements for learning. Learners have unique needs and preferences for concentration, and each must consider what is most efficient for her or for him.

After reading reports of research (Dunn & Dunn, 1978; Carbo, 1984; K. Dunn, 1982; R. Dunn, 1982; R. Dunn & K. Dunn, 1984), I began thinking that the information could be used even more effectively with college students, who have a great deal of freedom to choose their own study conditions. This essay will describe briefly the aspects of learning style research which I applied to my college reading and study skills course, and the ways my students and I used them.

Environmental Elements

Study environments seem to be important to college students; the topic emerges term after term. Dunn and Dunn's treatment of environmental elements (sound, light, temperature and design) fits nicely into our discussions of their question, "What is the best place for me to study? " We consider a wide variety of campus locations and how they fit people's study needs. The library, for example, has quiet areas away from the traffic flow, which work well for students who need brightly-lit, formal, quiet areas. Dorm rooms or apartments work well for those students who need some sound in the background. They also have the advantage of being easily modified for light and temperature needs. Students suggest that home is an excellent choice for people who need an informal setting where a couch or bed is available. My own preference is for the student union. It has a crowded, noise, daylight environment that fits the needs of some students. Study areas in various campus buildings, usually deserted in the afternoon, provide a wide range of learning environments.

Following class discussion of students' needs and the options available, I ask students to design environments that suit their most compelling needs. During the next several weeks, students study in environments that they feel are best for them and report their reactions in weekly journals. For a majority of students, a sense of relief pervades their comments as they accept their unique individual needs instead of trying to conform to an environment they were "sposed to" prefer.

Sociological Elements

"I can't study with anyone else. All we do is goof off. We never accomplish anything."

"Oh, no. I learn so much more when I talk with somebody else about my classes. I don't always understand what's important; talking with a friend really helps."

Students' comments lead our class into discussions of Dunn and Dunn's sociological elements: working alone, working with one other person, studying in a group, learning with peers, or asking a professor for assistance. Again, differences emerge, and students may prefer more than one of the options. Some would never approach a professor for help; they understand the material when a classmate explains it or when they struggle with it alone. Others have found that professors who will take the time to meet with students outside class are an excellent source of learning for them. Study groups usually receive mixed reviews. They are effective _if_ all the people involved take them seriously or _if_ one already has some understanding of the information, having studied it by oneself first.

To give students some experience with group study, I create weekly collaborative learning assignments (Radebaugh

& Kazemek, 1989) which require group participation. The concept of learning collaboratively is new to many students. Journal reactions reflect changing attitudes all term. For some, group cooperation frees them from the frustration of struggling to learn alone; for others, it is less efficient than working through difficult concepts by themselves.

Physical Elements

Dunn and Dunn's physical elements, time of day, need for mobility, perceptual preferences (auditory, visual, kinesthetic, and tactual needs), and need for food or drink while learning represent areas most students have never considered in relation to learning. More mature students often recognize their best--and worst--times of day for concentrating. I encourage younger students to experiment with their study schedules rather than merely reserving the evening hours for studying as they have done in high school. In college they have more options for scheduling classes, work and study times to meet their individual needs.

A need for mobility among my students appears to occur less frequently than many of Dunn and Dunn's elements, but when it is a factor it usually causes problems. One student reported that he has learned to pace back and forth when he studies for exams or learns difficult material. Other students need to change position frequently, get up and move around, or change location every hour or two. Students who require food or drink while studying find that getting up for a snack periodically meets their needs for mobility as well. Choosing professors who build small group activities into their class presentations can also be helpful for these students (Radebaugh, et al. 1988).

"I like it when you write the main points on the board," "When you draw a diagram on the overhead projector I really understand what you mean." Comments like these lead into an analysis of students' perceptual preferences. We discuss professors' ways of presenting information, our individual needs, and ways of adapting a professor's mode of presentation to our needs. For example, some students have learned to use webbing or mapping as notetaking strategies, or to draw diagrams that illustrate lecture or textbook information. One student, who learns best in a group setting, reported that her best study session was one in which the group acted out the organization of cell parts. Dramatizing for learning allowed her to understand interactions and thus to remember the information.

Emotional Elements

Dunn and Dunn's emotional elements (motivation, persistence, responsibility and structure) do, indeed, represent an emotional area for many study skills students. Usually they enroll in the class because they or someone else is concerned about their lack of motivation, persistence, and responsibility in college. They ask, "How can I make myself study for classes I am forced to take but don't have any interest in? It isn't something I like to do." We discuss the differences between intrinsic and extrinsic motivation, and the fact that as adults we can provide extrinsic motivation for ourselves. For example, watching a favorite television program or relaxing with friends can serve as rewards for studying. Students also discover that good study habits, such as choosing one's best time of day, creating a good study environment, and having a regular time for studying are particularly useful for those courses in which they have little interest.

Students are sometimes surprised at the differences in need for structure among class members. Some need to have their days tightly structured by "to do" lists and intricate daily schedules, while others find such structure restrictive and frustrating. Similarly, some students respond well to professors who are meticulous in giving instructions for assignments. Others prefer professors who provide general instructions but leave the details to students' discretion. We discuss ways of asking professors for more structure and ways of asking those who are too structured for us about possible alternatives.

Conclusion

As a result of weaving learning styles information into my class content, I have begun to make explicit several principles that were previously implicit. First, different learning needs do exist. They are not only acceptable, but they serve to make us the unique, fascinating individuals we are. Discussing our preferences allows us to open up to each other and to respect each other as competent learners.

Secondly, as adults, we have a great deal of control over our learning. We are free to find an appropriate environment and time of day for studying. We can reward ourselves for a job well done and can choose professors whose teaching styles meet our preferences or who adapt instruction to our ways of learning. We are no longer at the mercy of the system.

Thirdly, students learn to supplement the traditional competitive model of education with a cooperative model that allows learning to take place in the only source of knowledge; students learn from each other as well.

Including learning styles information in a college study skills class adds a personal dimension that has been useful to my students and me. People have marked differences in their learning needs and preferences; they learn best when they can accommodate at least their strongest learning needs. Very often, students who enroll in study skills classes learn in ways that don't fit traditional classroom expectations. Therefore, they feel that they aren't intelligent and that they can't do well in academic settings. Presenting Dunn and Dunn's view of learning styles with emphasis on an adult's control over her or his learning is a first step toward accepting that unique style.

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Charting: A Study Strategy

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Information organized in chart form can be easy to follow because of the clear, concise format. Perhaps this is why so many textbook authors use charts to present information involving, for example, stages of events, similarities/differences, advantages/disadvantages, and comparisons/contrasts.

Balajthy and Weisberg (1988) investigated whether college students could transfer their training in the use of charting as an organizer. They used a scientific text with a clearly apparent compare/contrast pattern for training. In contrast, students were tested with a real life scientific text in which the compare/contrast pattern was not so clearly obvious. Results showed students could transfer their training to a task involving reading a content textbook. Further analysis revealed that the lowest ability group in the low prior knowledge condition performed significantly better on the multiple choice test than the control group.

In another study Weisberg and Balajthy (1989) trained high school students with below average standardized reading scores to recognize the compare/contrast pattern. Students were taught to chart information from social studies selections and to write summaries from their charts. Results showed a significant difference for the experimental group for the tasks involving constructing a graphic organizer, writing a summary, and completing a comprehension test. Further analysis on a group by prior knowledge by task interaction showed that the experimental group scored significantly higher on the graphic organizer and summary task but not on the comprehension test. It was speculated that training helped students recognize the compare/contrast pattern; they could write summaries from their charts. However, low prior knowledge hampered them in answering the comprehension questions.

Results from other areas of research indicate that organizing information into a chart can be an effective study strategy. These areas include research on the effects of generating questions or summaries, graphic organizers, and text structure (Armbruster & Anderson, 1980; Andrew & Anderson, 1978-79; Bean, Singer, Sorter, & Frazee, 1982; Berkowitz, 1986; Guri-Rozenblit, 1989; Rauch, 1986).

Organizing information into a chart may also be effective because it requires a student to restructure information into categories. This process promotes involvement with the text beyond the surface level (Craik & Lockhart, 1972). Students are engaged in a form of active study which takes concentration and attention to various levels of information (Brown, 1985). The process of organizing the information is extremely important. The finished product (the chart) can be used for reviewing the information.

The studies cited demonstrate that teaching students to organize information into charts achieves positive results. These results have led the writer and her colleagues to develop materials and a procedure for teaching students to utilize this study strategy. The majority of the students enrolled in the Reading/Study Skills course are freshmen and sophomores ranging from "at risk" freshmen to students who are achieving high grade point averages.

The rest of this paper describes the materials and the instructional procedure used to teach students to organize information into charts.

Description of a Chart

In a chart information is organized into four levels: topic, subjects, main points, and details. The topic, the most general level, may be about a person, event, place or thing. The subjects are categories within the topic which are being compared or contrasted. The main points enumerate how subjects are compared and contrasted. The details are the facts. Information for the chart in Figure 1 was taken from a textbook (Melville, 1983) used in a sociology course entitled Courtship and Marriage.

Topic: Stages of Marriage

	Subj: Newlywed	Subj: Parental	Subj: Middle-Aged	Subj: Retirement
M.Pt.: Time Period	Detail: Until 1st baby arrives.	Detail: Until youngest child leaves home.	Detail: Until retirement.	Detail: Until death.
M.Pt.: Describe	Detail: Learn roles. Shared activities and companionship.	Detail: Roles redefined. Drop in companionship.	Detail: More freedom, financial mobility. Midlife self-evaluation.	Detail: More time together. Finances important. "2nd honeymoon."
M.Pt.: Marital Satisfaction	Detail: High	Detail: Decreases	Detail: Husband: increases Wife: first decreases, then increases.	Detail: High

Figure 1

Brief Example of a chart.

An alternate chart format would list the subjects down the left side and the main points across the top. Both formats are correct and students may select either based upon the information to be categorized.

The reader asks four questions as the selection is being read:

1. What is the topic of this selection or section? In this case, it would be "Stages of Marriage." Sometimes the bold faced heading gives the topic; in this textbook a major bold faced heading announced the topic.

2. What subjects are being compared and contrasted? Each stage is being compared and contrasted with the other, e.g. the newlywed with the parental, middle-aged and retirement stage, etc.

3. What are the major points or ideas? This is the most difficult aspect of charting because students must analyze what the writer is saying and then form questions that generate main points. For example, what is the time period for each of the stages? How does the writer describe each stage? What is the marital satisfaction for each stage?

4. What are the details? For example: What is the time period of the newlywed stage?

Instructional Materials and Procedure

Brown and Palincsar (1982) suggest that an effective instructional procedure includes several components. First, students need to be aware of why a strategy is effective. Then, they need to know how the strategy works. Also, appropriate practice should be provided so that students can use the strategy. In addition, students should be aware of when to employ a specific study strategy. The instructional procedure used for teaching students how to organize information into a chart incorporates these points.

Introductory Session

Charting is introduced through using the booklet, Charting: Organizing Information. Students read the first page which explains the procedure for charting and why it is effective. The instructor and students work through a two page practice selection containing very detailed information. A common study strategy students would use with such a selection would be underlining. However, they soon realize that they would be underlining almost everything. The instructor and students discuss the sample chart and why organizing the detailed information into a chart would be a more effective strategy. Students are cautioned that charting takes time, requires concentration, and often demands that the reader dig deeper than the surface level of the information.

The instructors of the Reading/Study Skills course collect charts that students develop when studying for various courses. Smaller charts are reproduced and included in example booklets. Students review the example booklets and the instructor explains how the former students used the charts when reviewing for their tests in various courses. In addition, the instructor explains the large student charts which are displayed on the classroom wall.

Charting Practice

After this introduction, students organize and chart the information from two paragraph length practice selections in the explanation booklet. They check their work with the model answers. One model answer uses the format in Figure 1 in which the subjects are written across the top and the main points are written down the left side. The other model answer uses the alternate format in which the subjects are written down the left side and the main points are written across the top.

Students chart selected sections of their study skills textbook. To make the practice with charting more relevant, students are told the midterm examination will include questions based upon the information organized into the charts. Students work together to read and organize information from one section of the textbook. They complete other textbook sections individually. After completing their work, students describe the charting process as the instructor writes the information on the board.

Students generally find that the topic and subjects are easy to discern and usually are similar across all student work. In contrast, the main point level is more difficult because students have to analyze what the author is stating and what questions they want to ask. Differences often occur across students' charts. One difference may involve semantics. For example, one student may write for a main topic, "Characteristics of minerals," and another student may write, "Consistency of minerals." Both ways would be correct because the answer is "powdery." Students are cautioned that when reviewing they should think of additional possible terms because a teacher could use many terms which may be synonymous. Another difference relates to category specificity. The example depicted in Figure 2 differs from the example in Figure 1 in that male and female subcategories are used for the main points of "Describe Roles" and "Marital Satisfaction."

Stages of Marriage

	Newlywed Stage	Parental Stage	Middle-Aged Stage	Retirement Stage
Describe Roles Male:				
Female:				
Marital Satisfaction Male:				
Female:				
Other Information				

Figure 2

A chart in which the main points are more defined.

Students usually have additional questions relating to category specificity. Not all information is easy to categorize and some authors include more information about one subject than another subject. Therefore, two suggestions are made. One, students may add an extra main point labelled "Other Information," for information which cannot be categorized into a single main point. Two, every main point will not have an answer, so there may be empty cells or spaces.

An additional practice activity consists of giving students a selection that describes psychological approaches to the study of adolescent behavior. Students read the selection silently. Then, they cover the selection and answer two questions: (1) What is the topic?, (2) How many approaches were discussed? (Only a number is requested.) Everyone remembers the topic. However, few students remember the number of approaches. There are six approaches discussed in the selection and the author signals the first three approaches by writing, "One ... The second ... A third ..." Consequently, the majority of the students say there are three approaches.

Next, students organize the information into a chart. They complete the topic, subjects (approaches), and main points; the detail level is usually omitted. The question, "How many approaches are there?," is discussed. Very few students miss any of the six approaches. Students explain why they missed the last three approaches. Answers focus on the fact that it is easy to see points when authors use signal words such as numbers (one, second, third). However, it takes concentration to notice other signal words such as "Another popular method," "then," "in addition." When charting the information, students indicated it was easier to discern all six approaches because they were more involved in the text.

An important point for students to keep in mind is that when they are studying, their task is to read, think, and organize the information for review.

Question Tips

Research indicates that questions based on ideas explicitly stated in the text are easier to answer than questions which require the reader to integrate information across text (Pearson, Hansen & Gordon, 1979; Raphael & Pearson, 1982; Rauch, 1986). Therefore, when reviewing information in their charts, students are urged to give consideration to the types of questions teachers may ask. Two classifications of questions are written on the board--within-category questions and across-category questions. A within-category question would be defined as one in which the question-answer relation would be concerned with one of the subjects. For example: What is the marital satisfaction for the newlywed stage of marriage? In contrast, an across-category question would be defined as one in which the question-answer relation would be about two or more subjects. For example: Compare marital satisfaction for the newlywed, parental and retirement stages of marriage. This type of question is more difficult because it requires the student to retrieve information from memory about three stages and then to compare the information to determine the answer. Students are instructed to ask themselves both within- and across-category types of questions when reviewing information in their charts.

Transfer of Learning

To get students to use this strategy, they are asked to identify other courses in which they could use charting as a study strategy. They share their plans detailing how they will use the strategy. Later they bring their charts and show them to the class.

In addition, the instructor has a follow-up conference with individual students after the tests in their other classes. If a student feels comfortable about discussing the test results, the instructor asks the students who are willing to do so to tell the class about the course. Specifically, they discuss how they prepared for the test, how charting information helped in answering test questions, and any changes they would make in studying for the next test.

Computer Program

Students who miss the introductory session on charting and who need additional practice with the concept of charting may view the computer program developed by the instructor. Lesson one presents a rationale for effective charting and a procedure for organizing information into a chart. Lesson two includes practice exercises. Students read articles and answer multiple choice questions covering the four levels of information. After answering each level of question (topic, subject, main point, details), a chart appears on the screen and the information is printed on the chart. Lesson three includes additional ideas for charting information. Suggestions for incorporating pictures, cartoons, and other visual aids are included. Suggestions for reviewing information are also presented.

Testing

After completing the charting unit, students take a quiz on it. The selections contain information from disciplines such as sociology, psychology, and science. Students receive a separate sheet with all the answers (topic, subjects, main points, details) arranged randomly in two lists. Directions tell the students to read the selection and organize the information (answers) into a chart.

The sheet with the answers is used because each reading and study skills instructor has between 75 and 130 students. The instructors like to return the quiz the following class session and discuss the results. In the interest of time, the instructors have found that standardizing the answers makes it easier to correct the quiz. Students who have difficulty with the charting quiz meet with the instructor to discuss their work. If they want additional practice an appointment with a tutor is scheduled.

Since several quizzes have been developed, students may take the quiz. Instructors believe that students who do not do well on the test may not understand the charting concept and that they may not be able to use it when studying for their other courses. Thus, a policy was established to continue to help students until they can pass the quiz. The retake policy seems to take the fear out of the quiz and generates a positive attitude toward trying the strategy.

Results from the Reading/Study Skills objective midterm examination covering textbook information which was charted and discussed in class were also analyzed. The results have been positive.

Summary

Organizing information into charts is one example of an effective study strategy. It is an active form of study which requires that students think about ideas in order to organize them into categories that include topic, subjects, main points, and details. In addition, it provides them with organized notes from which to review information. Finally, the strategy can be practiced and used by almost all students in a wide variety of courses.

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Using Music Lyrics to Teach Reading

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For decades research investigators have shown that watching television is perhaps the favorite leisure time activity for most students (Schwarz, 1982, Comstock, 1972; and Phi Delta Kappan, 1988), and recent reports reveal that they also listen to a great deal of music (Elkind, 1988 and Gorka, 1989). In fact, the average teenager listens to music four to six hours a day according to Parents' Music Resource Center (1986).

Numerous dollars are spent by students for the purchase of records, albums, tapes, and television videos for their musical enjoyment. It is a common occurrence to see students with head phone radios, portable box stereos, and various transistor type radios. They listen to them as they walk, jog, bike, cut the lawn, and complete other tasks. Many students listen to them even as they study. It is not unusual to find students, as they listen, singing the lyrics along with the artists. Careful scrutiny by teachers of the lyrics comprising certain songs may result in the discovery of a valuable tool for teaching select reading skills.

Since students do, in fact, spend a considerable amount of time listening to music, why not capitalize on that interest as a means of teaching specific skills in reading?

Although not all lyrics found in music would be appropriate, since much of today's contemporary music contains elements of explicit violence and pornography (Stroud, 1985 and Marshall, 1985), teachers through careful screening and selection can identify non-objectionable songs with lyrics suitable for reading instruction.

In teaching vocabulary, for example, lyrics in many popular tunes can provide the basis for teaching multiple meanings of words, or could be used to illustrate concepts such as connotation and denotation. They could even be used to enhance skill in contextual analysis. Higher level thinking and comprehension skills as well as critical reading skills could also be developed using music.

Parents' Music Resource Center (The Record, 1985) suggests several songs that they consider positive examples of music containing non-objectionable lyrics. These would be excellent choices for designing reading instruction. Carey Hart's Never Surrender which encourages the listeners to hold on to their dreams could be used to develop comprehension activities, also Kim Carnes' Crazy in the Night, which reminds adults in a humorous manner what it's like to be a small child alone in the dark. Others might include Stevie Wonder's Living in the City which examines the urban conditions that perpetuate crime and violence or John Fogarty's Old Man Down the Road which creates an awareness that all people grow old. This is a small sampling of songs with lyrics suitable for facilitating reading instruction. They have worked well in college level reading courses designed to assist students in the development of reading, writing, listening and speaking skills.

Suggested Procedural Plan

A wide range of strategies, techniques and resources are used to help students to realize their potential in select reading courses. In fact, music has proven to be one of the most valuable sources.

Numerous reading activities were developed from lyrics of musical selections. Many of the activities were developed with an isolated reading skill emphasis, and others were developed integrating skills of writing, listening and speaking as well.

To use it effectively as a tool for teaching reading, teachers should first decide what skills they want to teach or reinforce and develop behavioral objectives accordingly. Then, they should listen carefully to a variety of tunes for selection of those that will help achieve the pre-planned objectives. In the listening process, teachers might also want to consider tunes suggested by their students.

Once the skills to be taught are identified and the appropriate musical selection chosen, written copies of the lyrics should be given to each student.

To illustrate the potential for using music in a planned lesson, the following procedure for implementation of a vocabulary lesson is presented.

1. For instant motivation, play the selected song on a record player or cassette player. Have students identify the song by title and artist.
2. Have them read through the lyrics in an attempt to grasp the overall meaning or message being communicated or to retell the story presented in the lyrics in their own words (orally or written).
3. Ask open and closed ended questions about the tune in an effort to generate discussion and to heighten interest. Such questions may pertain to the artist, the recording company, the genre of the song and so on.
4. Introduce the vocabulary terms to be taught by writing them on the board in meaningful context. Pronounce each, then ask the students to pronounce each one.
5. Play the song again. This time, ask students to listen for the words presented on the board. This will provide a purpose for listening, and allow students a chance to analyze the words in context.
6. For added reinforcement, ask students as they are listening to underline the terms on their copy of the lyrics. Also ask them to underline any other words from the lyrics that might be unfamiliar.

7. After the selection has played, assign students to complete the vocabulary activities that you develop for them, based on the selection and assigned vocabulary terms. These may be activities on contextual analysis, figurative language, connotation, denotation, phonic analysis, multiple meanings of words, etc. A few may be built around dictionary usage.
8. After the activities have been completed, activities should be graded individually or orally as a class activity, giving appropriate feedback to students on incorrect responses.
9. Following the grading process and discussion, students should be allowed to use the dictionary to find the meanings of unfamiliar words they identified individually (not selected by the teacher).
10. The lesson could culminate by having students listen to the selection again, but this time singing along with the artist if they choose, or you might wish to introduce enrichment or reinforcement activities as follow-up.

Advantages and Disadvantages

Using music to teach reading has several advantages. Because of students' overwhelming interest in music, it provides instant motivation; it requires minimal knowledge of rhythm and music fundamentals on the part of the teacher; and it serves as an identity marker for generations of young people, according to Elkind (1988), that is "...constructed not only of the political and social issues of the times but also of the clothing, language, and music of that era." (p. 147).

Like most strategies that offer promise in helping students to read, there are disadvantages of which teachers must be cognizant. Teachers' time can be consumed in listening to and analyzing tunes in an attempt to screen songs for appropriateness. It may also be difficult to locate tunes with real lyrical substance. Finally, this strategy relies on the preparation of teacher made activities/materials for maximum effectiveness.

Conclusion

The importance of considering student interest in planning instruction is well documented by research (Ciani, 1981; Mager, 1968; Maxwell, 1971). Teachers are encouraged to use every possible effort and avenue to appeal to, and capitalize on students' interest as they teach reading. Music, because of its instant motivational quality, can be employed as a viable tool for the enhancement of reading skills. Carefully selected, lyrics from songs could open doors to better comprehension and vocabulary development as well as help to develop listening and writing skills.

This approach to teaching is a source of entertainment and enjoyment that could encourage reluctant and often underachieving readers to become more involved in the process of enhancing reading skill. It is also a delightful deviation from the more conventional modes of reading instruction.

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Teaching Note-Taking in a College Study Skills Class

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Teaching a study skill requires an instructor to present a clear explanation of the steps involved in acquiring that skill. It also requires a great deal of supervised practice. I designed the following strategy to assist students in my study skills course as they acquire information about note-taking and engage supervised practice during class time.

The Strategy

The strategy consists of the following six steps: (1) tapping into prior knowledge and experience about note-taking, (2) silent reading of the class text chapter describing note-taking strategies, (3) responding by use of a post-reading/reflective reaction, (4) practicing note-taking in teacher-led practice sessions, (5) checking after a practice lecture, and (6) practicing note-taking independently. Although this lesson usually takes a week, it can be lengthened or shortened to fit the time schedule of any instructor.

Tapping into Prior Knowledge and Experience

To investigate the students' prior knowledge, the instructor writes the phrase "note-taking for lectures" on the chalkboard or overhead and asks students what comes to mind when they see that phrase. The instructor gives them time to think, but no clues or answers are given at this point.

Responses are listed on the board. When students run out of responses, they are asked if they can organize the information into categories. After categories are formed, the instructor keeps this information on the chalkboard or overhead transparency for later reference.

To further investigate students' prior experience, they are asked to share experiences they have had with note-taking in high school and college. They are then asked questions such as the following: (1) Have these experiences been good or bad? (2) Have you taken courses in which note-taking on the professor's lecture was more important than reading the textbook? (3) Are you presently taking classes in which note-taking on the professor's lectures is of primary importance? (4) Why is it difficult to depend on another student's notes?

Silent Reading

Following the discussion of prior experiences, students read the chapter on note-taking in the textbook. As a guide for the silent reading, they are given a copy of the structured overview (Appendix A).

Post-Reading/Reflective Reaction

Using the information elicited during the prior knowledge exercise, the instructor leads the class to compare and contrast what they knew about note-taking before reading (as listed on the chalkboard or overhead) with what they know after the reading. They then delete and add information. Next, they form small groups and use the structured overview as the basis for a discussion of what they have learned. One alternative to having each group discuss every section on the overview is to form three groups and let each take one step on the overview to discuss. After small groups briefly discuss the information, a whole-class discussion follows.

Teacher-led discussion and practice sessions

The instructor makes the information relevant to the class by asking questions based on the students' reading and discussion. First, students are asked if they have the appropriate materials for note-taking in this specific class. Then they discuss why they chose to sit where they are. Students are also encouraged to clarify their intentions for the class period by sharing what they intend to get out of it.

The instructor also asks the students if they had previewed what they had learned on note-taking before coming to this class and if they have completed any or all assignments related to note-taking. Next, a discussion of the students' behavior during this lesson is guided by questions like the following: (1) Did your mind wander? (2) Did you practice getting back to the topic? (3) Did you maintain eye contact with the instructor? (4) Did you get in touch with your environment during the lesson or at a later time? (5) How did you avoid debate with the instructor's ideas? (6) How did you avoid judging the instructor's teaching style? (7) How did you participate in the class activities on the lesson? After the discussion triggered by the questions, students are encouraged to think about their personal goals and how learning to take good notes in their classes will help them attain those goals.

The instructor may follow up the discussion or provide an alternative activity like the following. The whole class can be led to identify key words on the structured overview. Students can then be divided into pairs or small groups and encouraged to call out key words to each other and to tell everything they know about those key words. After the group work, the instructor could lead a review of "In-Class Tasks" under the Record section of the structured overview described in the Appendix. Next, the instructor can present a lecture that requires the students to use information under the "Watch for Clues -- In-Class Tasks" and "Record -- In-Class Tasks" sections on the structured overview. For comparative purposes, all students are required to use the same note-taking format. During the lecture the instructor records information on the chalkboard, repeats important information, elicits active student participation, uses and draws attention to introductory, concluding, and transitional words and phrases, gives obvious clues, and shows more interest at one special point.

Checking after the practice lecture

The instructor checks with the students on the format. (For comparative purposes, notes are prepared in advance on an overhead transparency.) Next, students discuss the information copied from the board, the concepts that seemed to interest the instructor, and the repeated information. This discussion is followed by comparing and contrasting the students' notes with those of the instructor. Some of the format items checked include (1) the use of one side of paper, (2) "lost" signals, (3) separation of thoughts, (4) labels, (5) number and date recorded, (6) abbreviations, (7) use of complete sentences where appropriate, (8) use of pictures, diagram, graphic signals, and white space. Next, key words are added to the left-hand column. The last part of this activity involves having the students convert the information into a map, a formal outline, or informal paragraphs. This can be done in a whole-class or small group setting. At this point in the lesson the students have solid information about how to take notes. Further, they have had a great deal of using various ways to take notes. They have also used what they have learned in the study skills class itself.

Independent Practice

After having gained some experience in note-taking, students decide on materials and techniques that they find most comfortable for them. The instructor plays a video recorded program to provide in-class practice for student note-taking. Before playing the tape, students review the guidelines they learned for effective note-taking. After the tape is played, students engage in the activities described above.

As a test of note-taking skill, students are required to bring notes taken in another course to the study skills class for discussion. They keep records of their grades in those courses in an effort to determine if their grades improve with better note-taking skills. Students have informally reported higher grades as a result of improved class notes.

Appendix A

STRUCTURED OVERVIEW FOR NOTE-TAKING

STEPS	TECHNIQUES	TIME FACTOR	PREPARATION	OUT-OF-CLASS TASKS	IN-CLASS TASKS
1. OBSERVE	Set the stage	Complete outside assignments before class Conduct a short pre-class review	Bring right materials Sit in front of class Clarify intentions		
	Be Here Now in Class				Accept Wandering Mind Be with Instructor Notice Environment Postpone debate Don't judge lecture style Participate in class activities Relate what's going on to your goals
	Watch for Clues				Be alert to repetition Listen for introductory, concluding, and transitional words and phrases Watch the board Watch instructor's eyes Don't ignore obvious clues Notice instructor's interest level
2. RECORD	Cornell Format Mind maps Outlines Informal paragraphs Combinations of above		Buy 3-ring binder or 3x5 cards Avoid tape recorders		Use key words Use pictures and diagrams Copy material from board Use one side of paper Keep your thoughts separate Use a "lost" signal Label, number, and date all notes Use standard abbreviations Use white space Use graphic signals Use complete sentences when material is important
3. REVIEW	Read Recite Create	Review within 24 hours Review weekly Review before class	Edit notes Fill in key words in left-hand column Organize with graphic signals	Recite by use of key words as cues Create mind map summaries	

Using Periodicals to Promote Reading/Writing Competencies and Cultural Awareness

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An underlying theme of several well-publicized reports concerning achievement levels of secondary students suggest that they have limited knowledge of the world. Further, these same reports suggest that students demonstrate little competence when it comes to writing about either what they do know or what they believe. The purpose of this paper is not to elaborate on deficiencies among secondary students but to present strategies designed to help overcome weaknesses in reading and writing while, at the same time, encouraging cultural awareness. References concerning the need for such strategies are numerous and convincing; among them are Hirsch (1987), Cheney (1987), Applebee, Langer, and Mullis (1987), Anderson, Hiebert, Scott, and Wilkinson (1985) and the National Commission on Excellence in Education (1983). To help students strengthen competencies in reading and writing direct instruction is essential. Modeling is a key component in direct instruction. Durkin (1989) described modeling as "an attempt to demonstrate, or act out, a particular behavior or thought process" (p. 61). Further, the kind of materials used can help provide more cultural awareness among learners. A strategy for approaching both of these ends, improving reading and writing competencies and increasing cultural awareness follows. The model involves three basic steps --

selecting material, providing background information, and asking key questions. Suggestions are offered to accomplish each of these.

The Instructional Model

Material Selection

Select well-written material of current interest. Articles for in-depth study do not necessarily have to reflect present interests of students but should have potential for considerable importance. For example, a recent article concerning the U.S. federal budget deficit was not of great interest at first but further study led to considerably more interest as students related the budget deficit to their own ambitions and interests. Students were not interested in the deficit essentially because they had little understanding of what it was and its present and potential effect on them. Students were somewhat surprised to learn that if the debt were equally divided among taxpayers each of them owes approximately $10,000.

Sources of material are varied. They include such periodicals as Time (phone 1-800-882-0852) and Newsweek (1-800-526-2595) who offer their magazines at reduced cost through education programs. Many newspapers at local levels and USA Today (1-800-752-7510) at the national level have low-cost school-oriented programs. A sample high interest article is presented in Appendix A. This article concerns gun control, a lively topic among any secondary or college reading class. Copies of an article such as this and accompanying activities can be kept on file for future use as exams or for study by subsequent classes in light of newer material.

Occasionally a particular article is found in a source not used regularly in the classroom. In this instance, an article may be photocopied for spontaneous classroom use under the "fair use" provisions of U.S. Public Law 94-4553, 1978. For example, an article from a news magazine concerning computer viruses was studied. A few days later newspapers reported the arrest of a man charged with programming a virus into the memory system of his former employer's information bank. The original newspaper account and two copies were made available for students to read and discuss. This helped demonstrate the importance and relevance of the article studied earlier.

In addition to comprehensive articles, very short but highly interesting news articles appear regularly in news magazines and other sources such as magazines accompanying Sunday newspapers. These are particularly good at the onset of a program involving essay writing since they are considerably easier for students to write about. For example, a 200 word article described how rock singer David Lee Roth participates in rock climbing. Students responded to the following question: Why is David Lee Roth a rock star in more ways than one? The activity proved both interesting and academically profitable.

In selecting material, the main purpose is to find material of interest or at least potential interest and value relative to cultural awareness. Students can learn to read more competently while learning about the world. Students, of course, cannot greatly enhance cultural awareness all at once. However, inviting them to study topics that effect both their own lives and the greater community around them can use self-interest, as a strong initial motivator. An article about depletion of the ozone layer, for example, may have more awareness value than an article about migration of caribou. Such articles abound, instructors need only an alert eye to build a valuable collection of them.

Background information

Provide essential background information. A large wall map is extremely helpful for showing students where various countries under study are located and how they are geographically related to other nations. For example, stories about unrest in Armenia and Azerbaijan were made more meaningful through the use of a wall map. Globes and atlases are also useful for this purpose. Further, essential vocabulary not easily discernable from the context can be presented along with the discussion background information.

Questions

After initial discussion, ask students to read a selection or several selections and then respond in writing to several questions. The following categories, suggested by

Trosky (1972), can be used to generate a variety of interesting and searching questions: (1) recognition questions requiring only ability to locate an answer found directly in the text, (2) translation questions to determine if readers can put ideas into their own words, (3) inference questions demonstrating ability to reason beyond what is directly stated in the text, (4) evaluation questions to provide students with the opportunity to apply their own values in responding, (5) questions that require explanation of why something happened, and (6) questions that require use of imagination based on informed reasoning. Naturally, some stories lend themselves more readily than others to particular types of questions.

Nunnally (1972) suggested using several shorter essay items rather than fewer longer ones. He also admonished question writers to "provide enough detail in the question to accurately aim students toward the correct response" (p. 182). Nunnally's precise, yet comprehensive, instructions for preparing and evaluating essays can be extremely helpful.

Student essays can be examined by the instructor and comments prepared for the next class meeting. Sample comments are: 1. write out single digits (ex. "five" and not "5"), 2. watch letter formation, 3. use more paragraphs, and 4. start each response to a question with a sentence that restates the important information asked for in the questions, etc. Preparing comments for the entire group and presenting examples on a chalkboard or overhead is more helpful and efficient than dealing primarily with individual students. Students can engage in a great deal of writing. The instructor does not need to write copious comments on each paper. The "general comments" approach works well. Student essays can be kept in file folders, one for each student. In this way, students can evaluate their essays along with the teacher. For example, students can compare essays written early in the semester with essays written as the term progresses. Shaughnessy (1977) determined in her classic study of underprepared college students that the act of writing, in and of itself, promotes competence in writing.

Present model answers to essay questions on an overhead projector or individually reproduced on a sheet for students. Students can compare their responses with the ones presented. The purpose is not to present "the" right answer but to demonstrate how an acceptable response was determined.

Since most essay questions require at least some degree of divergent thinking, a rich variety of responses can be expected in written essays and during discussions. Consequently, the instructor's model response is viewed as a guide more than a benchmark regarding quality. Sample questions and responses are presented in Appendix B.

Conclusion

Students find themselves involved in the study of events that might have an immediate or potential effect on their lives. Thus, greater interest is evident. Competencies developed can transfer to other courses, even where the interest level is not as high. Variations are boundless, depending on interests, capabilities, and needs of students. Materials are easy to prepare and offer the instructor, as well as students, variety and stimulating subject matter. A news magazine is a valuable resource and can be used as the major or even the only text in a college reading class. The user of a news magazine need not be an authority on national and world events. Far from it, the teacher can learn right along with students and share writing experiences and insights gained. It's exciting to have a new textbook each week!

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APPENDIX A
Sample Article

Why Wait A Week to Kill?

"Guns don't kill; people do!" The simple logic of that refrain from the National Rifle Association would suggest that the nation's 2.8 million-member gun lobby would support any move to keep the wrong people from acquiring deadly weapons. Not so. The N.R.A. invariably goes to war against any attempt to limit the avalanche of handguns that are used to kill 21,000 Americans annually. Last week the gun lobby triumphed in its latest campaign, a $4 million effort against a sensible congressional proposal to strengthen existing federal restrictions on the sale of handguns. The legislation would have required gun dealers to wait seven days before completing a sale, giving police time to determine whether a buyer is a convicted felon, an illegal alien, a drug abuser or a mental patient. Last week the House meekly bowed to N.R.A. pressure and killed the proposed waiting period by a vote of 228 to 182.

The legislation was inspired in part by Sarah Brady, wife of White House Press Secretary James Brady, who remains an invalid seven years after being hit by one of John Hinckley's bullets during the attempt to assassinate President Reagan. She has led a series of fights for tighter gun laws. The Brady amendment enjoyed broad support from gun-control opponents, including an unusual coalition of eleven national police organizations. Even the President praised the idea of a waiting period, citing how well it has worked in California. But with elections only six weeks away, many Congressmen who favored the proposal could not ignore the powerful N.R.A.

Florida Republican Congressman Bill McColumn Jr. offered a way out of the quandary. He proposed replacing the waiting-period requirement with a provision to give all 275,00 federally licensed gun dealers in the U.S. instance access to a nationwide list of convicted felons. Prospective gun buyers could be fingerprinted and the samples sent electronically to Washington for an instantaneous check against the FBI's millions of prints.

But there is no master list of convicted felons, no way to make such data quickly and widely available, and no speedy means of sending and matching fingerprints. A network to provide such information could take years to create and cost up to $500 million; making it available to gun dealers could violate civil liberties. Beyond that, McCollum's system would not prevent gun sales to illegal aliens and the mentally ill.

Still, a majority of House members reached for this fig leaf. They voted to kill the Brady amendment and replace it with McCollum's phantom plan. Even leading Democrats from states where the N.R.A. is strong, like House Majority Leader Tom Foley of Washington and House Whip Tony Coelho of California, supported the gun lobby. They contended, as has George Bush, who boasts that he is a life member of the

N.R.A., that such restrictive legislation should be left to the states. But only 22 states require waiting periods. A gun buyer in a hurry need only cross a state line to speed his purchase.

That disparity caused Illinois Republican Henry Hyde, one of the House's most conservative legislators, to abandon his normal states' rights stance.

"These guns are ambulatory," Hyde argued. "This is a national problem. If we made it a little difficult for someone who is angry and wants to kill, maybe we would save some lives." Demonstrating how the issue cuts across both ideology and geography, Speaker Jim Wright of Texas joined Hyde in opposing the McCollum proposal, despite his home state's animus to gun control.

Their logic did not prevail against the N.R.A.'s cold cash. Collectively, the Congressmen who voted to doom the waiting period have received "$1,167,908 from the gun lobby in the past five years. The 70% of Americans who supported tighter gun controls are rarely as passionate, vocal or generous.

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APPENDIX B

Sample Essay Questions and Responses

1. Approximately how many Americans each year are killed by people using handguns? (26)

   Approximately 21,000 Americans are killed each year by people using handguns.

2. What proposal concerning limiting the sale of handguns was recently defeated?

   Congress defeated a bill to require gun dealers to wait seven days before completing the sale of a handgun. Proponents of the bill argued that the delay is necessary so that police would have time to determine if the prospective buyer is eligible to buy a gun legally. Mental patients, convicted felons, illegal aliens, and drug abusers are not permitted to buy handguns legally.

3. What are evident weaknesses in Congressman Bill McCollum's proposal for an alternate to the waiting period.

   Congressman Bill McCollum proposed that gun dealers have access to an FBI bank that would identify felons through checking electronically transmitted fingerprints.

4. How do you fell about the proposed waiting period?

A response that support the waiting period:

The proposal requiring gun dealers to wait seven days before completing the sale of a handguns to those not legally qualified to purchase them: drug abusers, convicted felons, and illegal aliens. Further, the waiting period can prevent persons from buying handguns in the heat of anger or depths of depression. The delay is sensible, especially for those who fear becoming victims of a crime involving a handgun.

A response that does not support the waiting period:

Setting up such a system would be time consuming and expensive and might well be unconstitutional. Further, it would do nothing to prevent illegal aliens, drug abusers, and mental patients from buying guns.

Protocol Analysis

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Student reading performance is most often assessed on the basis of standardized test results. Unfortunately, these tests provide limited information about how students read. According to Rosenblatt's (1978) transactional theory, the "reader's main purpose is to participate as fully as possible in the potentialities of the text" (p. 69). Obviously such participation cannot be assessed adequately using conventional objectives tests. However, one informal strategy that does provide access to students' thoughts as they read is the use of protocol analysis.

Ericsson and Simon (1984) indicate that their research suggests that use of protocol analysis can:

> reveal in remarkable detail what information they (subjects) are attending to while performing their tasks, and by revealing this information, can provide an orderly picture of the exact way in which the tasks are being performed, the strategies employed, the inferences drawn from the information, and the accessing of memory by recognition. (p. 220)

Ericsson and Simon (1984) described protocols as retrospective reports, talk alouds, verbal reports, or thinking out loud (TOL) data which provide a sample of what is on the subject's mind during the task.

They suggest that, "This form of retrospective verbal report should give us the closest approximation to the actual memory structures" (p. 19).

A number of other researchers have demonstrated that verbal data can be an important source of information about cognitive processes (e.g., Biggs, 1977; Garner, 1982; Olshavsky, 1976-1977; Steinberg, 1986; Williams & Williams, 1985).

Biggs (1977), Olshavsky (1976-1977) and Williams and Williams (1985) found the use of verbal protocols to be useful in examining subjects' thoughts during retrieval tasks. Though this method allows for a varied response by the reader, it only reveals what the reader has selected to verbally state. This type of recall could provide a faulty index of comprehension, "since subjects are free to decide how much and what information to include" (Baker & Stein, 1981, p. 10). Recognizing these limitations, protocol analysis can be an effective technique. Further, Steinberg (1986) used protocol analysis to analyze the writing process. Although recognizing that there are many skeptics, he concluded that protocol analysis is a helpful, useful, and reliable method for his purposes.

I have attempted to provide a theoretical framework for the use of protocol analysis. In the section below I will demonstrate the application of protocol analysis with a college student using the story, "The Secret Life of Walter Mitty" by James Thurber.

I met with Joy (name has been changed) and described what would take place during the session. She was going to read silently, "The Secret Life of Walter Mitty." As I observed, she was going to help me understand what was going on in her mind as she read. She was asked to think aloud, responding to the question: "What is going on in your mind as you read?"

The responses that Joy made were elicited at self-selected junctures rather than at predetermined points. This allowed for a more natural reading and avoided imposing my schema. She responded to the question throughout her silent reading. If she had any questions she asked them, but I did not respond. Since I was interested in what she was processing, I didn't want to influence her thoughts. However, based on her response, I probed for clarification by asking other questions.

When she did not have any comments after a period of ten minutes, I probed by asking, "What is going on in your mind?" After she completed the story, I asked a set of questions. This method is based on techniques described in the work of Ericsson and Simon (1984) and Newell and Simon (1972), and focuses on the individual reader.

Joy's responses were audiotaped. From these tapes, written transcripts were produced. I also took notes during the session. Some of the notations included non-verbal behaviors, which occurred as she read and responded to the text. Further, the verbatim dialogue was transcribed. In addition, a summary of the session was prepared.

I noted in my summary that Joy read, "The Secret Life of Walter Mitty" twice. During and after her first reading she appeared to be confused and puzzled. She went back to the story a second time to try to resolve some of the questions she had. Following is a partial transcript of Joy's response to the text during her second reading of the second page of the story. The term "probe" signals questions that I asked during the session.

Joy: I wonder if he is really the thing in the past? Maybe he is just wishing he is somebody. He is a Commander here and now he is a doctor. That is pretty major. How did he learn all this stuff in such a short life?

Probe: Do you think he was both?

Joy: He could be, it is possible, but it is more impossible, that it is possible.

Probe: Knowing what you know of the story and what you know of Walter Mitty do you think he was the Commander and the doctor?

Joy: It is clear that he was the Commander and he said this and that and it is clear that he is a doctor, he took care of, I don't know, maybe..., then he killed somebody... I don't know. He could be... If you are going to be a doctor you need a long time to research and study to become a doctor. To be a Commander you need to be there for a long time to get that rank and he killed somebody? This is kind of weird too. I don't know. I have to figure that one out too. (After a long pause.)

Joy: I don't think he ever was a Commander and I don't think he ever was a doctor. I don't think he ever killed anybody. I think he sort of wants it to be like that. The reason I think that is when he came to "it's the millionaire banker Wellington McMillan said the pretty nurse yes said [Dr.] Walter Mitty removing his gloves slowly." Okay, if he doesn't want to wear gloves now in the present when his wife said put on the gloves you're not going any more, that means you never wore them, when you were young now you're old, you have to wear them. He was never none of this. It is just things he wanted it to be. Everything in all situations turned out to be great, situations that were totally devastating, things just turned out to be great. He was never any of this, this is just things he wanted to be.

Probe: What made you realize that these are things he just wanted to be?

Joy: If you're a Commander you have to go there young, you're drafted in the war, you have to earn that, you're not a Commander in a day, you have to go through the training. For him to be a doctor can take a very long time. Okay if he was a Commander but he wrote a book. This takes a lot of experience a lot of knowhow of how to do things. There is no way he didn't do any of this stuff, he NEVER did it. It is just all in his mind. (After a long pause.)

Joy: There isn't any present any past. This is all in the present, it is just that he is daydreaming. It is not a past at all. He is right there and he is just thinking it. It is not like it is 1940s to 1987 to 1940s. He is in 1987 the whole time, he is just thinking. It is still 1987. It never really happened.

Protocol analysis provides insight into the thought of readers as they interact with a specific text. It can be the basis for assessing strategies used during reading performance. It is an innovative learning strategy that informs both the teacher and student.

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Teaching College Communication Skills and Study Strategies

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Over the past decade, research has continuously addressed the need for teaching students to think and read critically at all levels of education. Myers (1986) points out the concern on a national level that educators have expressed towards the inefficient critical thinking skills of many students. This inefficiency is also apparent when examining students' critical reading skills as well. It has not been uncommon for college freshman students to arrive at many institutions in need of a developmental reading course to assist them in mastering the reading of content material.

At the elementary and secondary levels a similar pattern is observed. These students are required to take a special reading class once standardized test scores are examined and indicate serious reading deficiencies. Furthermore, recent research by Ann Brown, Richard Anderson, Scott Paris and others indicates that knowledge about thinking can aid critical reading. This is significant because technology is accelerating at such a tremendous rate that students must rely on their own critical thinking and reading abilities to comprehend the wealth of material now available to them at all levels. Since some books and other materials are becoming outdated in a short period of time when new information is discovered, students must constantly discard old reorder knowledge and learn new knowledge as well. This means mastery of new information must often be done independently (Myers, 1987). For the high school and college students, this is especially essential. Therefore, instruction in the communication skills (listening, speaking, reading, thinking, and writing) and in the study strategies (e.g., notetaking, summarizing, test-preparation) can be the vehicle for promoting improved critical thinking and reading.

This article, then, will address the teaching of communication skills and study strategies. Activities will be suggested for use in the classroom.

Communication Skills

The communication skills include listening, speaking, reading and thinking and writing. In the case of oral communication, it is now recognized that a distinction exists between merely speaking and speaking effectively. Anderson, et al. (1983) states:

> Students being human, talk a great deal. They talk to friends, parents, brothers, sisters, storekeepers, salespeople, teachers, lovers, strangers. They talk in person, over the phone, on tape machines. For speech is the most human activity, indeed the distinguishing human activity, one we begin to learn unconsciously,

effortlessly it seems, before we even learn to walk. (p. 13).

Because speech has been used since infancy or early childhood, we tend to take its development for granted. No systematic attempt is made to help students develop more efficient oral communication skills.

The emphasis that Ken Goodman (1986) reviews in What's Whole in Whole Language suggests that teachers invite students to use language constantly to build oral communication abilities. He maintains that teachers should get them to talk about things they need to understand and show them it is all right to ask questions, to listen to the answers and then to react or ask more questions.

According to Goodman (1986), whole language materials should include recreational books, fiction and non-fiction, including a wide range of books at various levels of interest and difficult. In addition to this, resource materials of all kinds should be available, such as dictionaries, phone books, and adult reference books. Goodman (1986) further maintains that in every classroom there should be a library enhanced by book exchanges and book clubs.

While Goodman (1986) focuses on whole language activities at the elementary level as a means of developing language skills, he also indicates that students at the secondary level too must be taught to use their language and various resource materials to improve this language because its development is continuous. In fact, college graduates are now beginning to indicate that while oral communication skills receive minor attention in college they are those most needed after graduation. Therefore, it appears to be crucial that oral communication be developed at the elementary level through systematic instruction and that this instruction continue through the postsecondary education experience.

Critical thinking, critical reading and correct writing are equally important. Boyer (1987) states that the undergraduate student must possess adequate skills in speaking and writing to be successful in college. Speaking and writing clearly and listening and reading with good comprehension are essentials. There also can be no separation between language and thinking. If students are to become intellectually and socially empowered, they must develop their language and thinking abilities.

The following suggested teaching activities can be used at various grade levels to promote student proficiency in these areas:

A. Listening

1. Critiquing Speeches

Have students listen to speeches of famous Americans such as present and past U.S. Presidents, e.g. George Bush, Ronald Reagan, John F. Kennedy; civil rights leaders, e.g. Martin Luther King, Malcolm X; political leaders, e.g. Governor Dukakis, Tip O'Neill, Mayor Andrew Young.

Ask them to summarize the main points of each speech, tell the major point the speaker is attempting to make, and evaluate the effectiveness of the speakers' argument based on established criteria.

2. Studying the Impact of Propaganda Techniques

Have the students listen to a description of the different types of propaganda used by advertisers, e.g., Testimonial (famous person supports an item to buy) Transfer (product for sale is associated with something else desirable, car and beautiful model). Present sample advertising slogans and ask them to identify the type of propaganda technique and its impact on unwary listeners illustrated in each one and the clues in the advertisement that helped them make their decisions.

B. Oral Book Sharing

1. Have students share information from a favorite book that they have read. It may consist of a brief summary of the book's major points, their reaction to the book and/or what value the book has for the readers. If the book relates to current events, e.g. child abuse, sports, careers, etc., discussion also should attempt to associate the book's relevance to today's happenings.

2. Dramatization = Speeches for Political and Community Activities. Have students prepare a short speech on a particular issue of the day for class presentation. It could be a concern about a section of the community where

a traffic light is needed, the need for a student representative to city council, cleaning neighborhood streets, or improving community recreational facilities.

C. Reading

1. Vocabulary

a. Structural Analysis

Students are given a chart of common roots, prefixes and suffixes with definitions and sample words containing these word parts.

They review this information and then:

1. Match word parts with correct definition,
2. Study sample sentences explaining meanings of words containing these word parts and
3. Complete sentences correctly with words containing roots, prefixes and suffixes.

b. Context Clues

Have students read sentences containing words from stories they have read. Ask them to try to figure out the meaning of the word based on the clues in the sentence.

Information may also be supplied about different types of context clues, e.g., definition, substitution, opposites, etc.

2. Comprehension

a. Level Guides

Have students read short stories, expository articles in different disciplines and ask them to answer questions at the different levels of comprehension, e.g.

1. What is the name of the man who bought the bicycle? (literal)
2. Why do you think Marty forgot to lock his bicycle that morning? (interpretative)
3. Relate this story to an experience you have had. Explain what you have learned. (applied)

b. Questioning Strategies

Have students turn titles and headings into questions using what, why, and how. Answer these questions after reading material.

C. Critical Thinking

1. Oral Debates

Have the class divide into two sides on an important issue for an oral debate. Research the issue and have students prepare their material for the debate. Possible topics might be war on drugs, abortion, nuclear defense.

2. Reciprocal Questioning

Have students ask teacher a question, about material read, after he/she responds, student is asked a question by the teacher. Student responds. At select points both teacher and student think aloud to demonstrate how questions and answers are developed.

3. Analyzing Propaganda

Have students read and/or listen to advertisements, editorials and speeches of controversial public figures, e.g. Hitler (German Nazi), McCarthy (Anti-communist), Stokely Carmichael (Civil Rights Activist). Ask them to discuss the content of these speeches and the elements of each speech that appear to show propaganda.

4. Analyzing cartoons, maps, graphs and advertisements

Have students discuss what they see and understand from looking at cartoons, maps, graphs, and reading advertisements. When appropriate, relate this material to content text material.

5. Problem-Solving Activities

Have students determine the solution to a particular problem such as improving test performance.

Investigation can be made of how to prepare for different types of tests and what kinds of questions may be asked on each type.

E. Writing

1. Book Reports

Have students write a statement or paragraph about books they have read to encourage or motivate other students to read them. They may, for example, describe incidents or characters in the book.

2. Summaries

After reading and discussing the major focus of short selections read in class and sharing steps for summarizing, have students read and summarize short selections. Gradually require them to read and summarize longer selections.

3. Creative Writings

Have students write poems, short stories, and/or sequels to stories they especially enjoyed.

4. Essays

Have students read essay summarizing and reacting to one or more essays about important issues, e.g. sports in college, drug abuse, abortion, terrorism, etc.

5. Journals

Have students keep a record of their reactions to stories and other material they have read.

One example of how the communication skills could be taught holistically using a reading selection would be to present an article by John F. Kennedy entitled "A Nation of Nations."

Students would be asked to read a short biographical sketch of the late President. Next, they would listen to a speech by the late President and critique its contents. This activity would be followed by a pretest on the terms found in the reading selection "A Nation of Nations." Vocabulary would then be discussed to give students adequate background knowledge of key vocabulary to be encountered during the reading of the selection.

Students would then be asked to read the selection and check the answers they feel are correct to an accompanying level guide. Sample items from "A Nation of Nations" are listed below.

A Nation of Nations

I. Literal Level

Directions: Read each statement listed below to see if it contains the same material presented in the reading selection. Put a check on the line opposite each statement that does so. The statement may either contain the exact words from the selection or it may paraphrase, as long as the information is the same. Be able to give evidence to support your opinion.

_____ 1. John F. Kennedy wrote the book, Democracy in America.

_____ 2. Over 5 million people have come to America from other countries since 1607.

_____ 3. Most Americans are either immigrants or descendants of immigrants.

II. Interpretative Level

Directions: Read each statement listed below to see if it relates to the material presented in the literal level section of this exercise. Put a check on the line opposite each statement that expresses an idea that can be reasonably supported with material from the reading selection. Be able to give supporting evidence on your opinion.

_____ 1. A foreign observer can see many facets of a growing nation and its people.

_____ 2. A nation can be outstanding because of the diversity of its people and their background.

_____ 3. In a way, we are all immigrants.

III. Applied Level

Directions: Read each statement listed below and compare each one to ideas and experiences you have had which are similar in principle to the material presented in the reading selection. Put a check opposite each statement which you think is reasonable and which can be supported by both ideas in the reading selection and your own related experiences.

_____ 1. It takes only certain kinds of people to make a good world.

_____ 2. Having common problems can cause people to feel the same.

_____ 3. Good living attracts good people.

Students should be encouraged to work together in groups of two or three to determine answers (collaborative learning). Class discussion would then follow.

Other activities could be research reports on the Kennedy Administration, role playing speeches, and debating critical issues of the Kennedy Administration, e.g. bay of pigs, civil rights.

By working through procedures such as these students should greatly enhance their communication skills.

Study Strategies

Study skills instruction has existed at a national level for a number of years. The original intent of this instruction was to orientate new students to college study (Maxwell, 1979). However, in recent years, research on metacognition has added a new dimension to this area. Brown (1982) emphasizes that students should be taught not only to learn how to read but also how to learn from their reading. They should be given the ability to learn new information by being taught how to become aware of whether or not information presented is understood. Appropriate self-questioning can then be conducted to enhance comprehension. Questions that might be asked are "What do I know that might help me figure it out?" "What specifically do I not understand?" This type of questioning is related to metacognition - "knowledge and control of one's thinking and learning activities" (Brown, 1982, p. 28). In order to use metacognition while reading and learning, students need to be aware of their own cognitive processes. Once this has occurred, efforts can be made to improve any deficient skills that may exist. The next step is to then use self-regulation strategies while reading, solving problems, listening or learning in general to evaluate outcomes of a problem solving situation, to decide the next step to take, to monitor the impact on learning material as a result of any effective action and to test and revise strategies used in learning (Brown, 1982).

The following suggested activities can be implemented when teaching study strategies.

A. Library Assignments

Have students take a tour of the library and answer previously prepared questions about the location of specific items in the library. Articles from journals can be read and summarized and/or a topic can be researched to identify several sources of information, e.g. books, magazines, journals.

B. Oral Reports

Have students share the information they have read about a subject of interest, e.g. John F. Kennedy, college life, careers of the future, divorce, etc.

C. Summaries

Provide procedures and steps for summarizing material. Then have students summarize notes from a content lecture, a textbook chapter, a magazine or journal or article.

D. Outlines

Have students outline material from chapters in content textbooks and other expository material.

E. Study-type Reading Assignments

Have students preview a textbook chapter from a content textbook, set purposes for reading by changing headings into questions, and take notes from the text related to these questions.

These are some suggested activities that should allow students to develop strengths in all of the communication skills (listening, speaking, reading, thinking, and writing) and in the study strategies (notetaking, summarizing, test-preparation, etc.) as well. Learning in this fashion should enable students to see the relationship of education to the real world and promote skill in independent critical thinking and reading.

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PART III. RESEARCH

Studies reported in this section represent the work of both experienced and inexperienced researchers. Strategies investigated include a procedure for ordering reading and reading-related learning units, a theory-based method for designing a syllabus, a process for determining the effectiveness of a developmental reading skills course, and an alternative vocabulary learning approach. A review of recent experimental research in college reading concludes the section. First, Hashway and Gamble describe an application of classical scaling to the problem of optimal sequencing of reading and related skills. Then, Perkins and Brutten present work that assists teachers in developing a curriculum that more accurately meets students' needs. Rhoads' study follows and identifies success indicators of a reading and study skills course for freshmen. A vocabulary learning strategy investigation by Levin et al. challenges current research in that area. Finally, Scales, Bartel, and Orth describe the contributions made by empirical research to college reading and study instruction.

Developmental Learning of Language Arts, Reading and Study Skills

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From the time Robert Glaser (1963) coined the term "instructional technology" many technologists have developed generic systems (Glaser & Nitko, 1971; Hashway, 1979; 1988; Nitko, 1968; Klahr, Langley and Neches, 1987). In essence, each variant of the new technology points out that at least seven areas need to be addressed: instruction should be individualized; objectives of each lesson should be clearly stated and understood; resources should be keyed to each learning unit and objective; there should be frequent diagnostic and achievement testing; peer tutoring enhances the learning experience; student time must be focused on the learning task; and, learning units should be properly organized to expedite learning. There is a great deal of literature concerning the first six areas. Unfortunately, there is not a large amount of empirical research concerning the optimal ordering of learning units.

Robert Gagne (1961, 1965) has defined the learning network as an ordering of learning units or tasks which is not necessarily represented in a linear hierarchy. In certain cases a student may be exposed to a linear set of experiences and in other cases there may be more than one unit that a student is prepared to study. The purpose of this paper is not to present the Gagne network. Readers interested in network theory should consult the primary sources.

Major problems with the networking models include cognitive factors which are not part of the instructional model have not been taken into account, and psycho-social student background is not recognized. Those are important factors which impact student progress. Since most developmental skills and alternative learning center programs are principally involved with the delivery of instruction, personnel in those programs are more concerned with the needs of their students than with design and evaluation (Hashway, 1989). The cost of those programs mandates that educators evaluate programs in order to implement the most effective as well as cost efficient instructional delivery systems. There has been little reported research concerning how to easily determine the structure of a learning network, or examples of its application. The purpose of this paper is to describe how classical psychometric techniques were applied to the problem of empirical network determination and how the network was used in the Commonwealth Developmental Reading and Writing programs. Hopefully, the results will stimulate further research in this important area of "instructional technology."

Method

The aim of this research is to identify and describe an empirical network of reading tasks. To understand the results it is necessary to be aware of the structure of the

Commonwealth Developmental Skills Program, the data sources, and the scaling technique used. Those aspects are described below.

The Reading Placement Test developed by the Massachusetts State College System (Hashway, et al, 1980) and the Missouri College English Test (Callis & Johnson, 1965) were the instruments used to obtain the data. Those tests are components of a larger instructional resource recommendation system (Hashway, 1979; Hashway, et al, 1980). That system is designed to diagnose student skill deficiencies, suggest available resources which will assist the student in overcoming those deficiencies, assess student mastery status after instruction, evaluate the learning sequence and evaluate each learning resource. The purposes of the Reading Placement Test are to identify students who are in need of assistance and assess student achievement in terms of twelve broad reading and study skill domains. Those domains will be subsequently described.

The Reading Placement Test, as part of a larger instructional system, was designed to have curriculum relevance. A task force whose members represented reading departments in the system was assembled. The task force assumed the responsibility of defining the skills for which an entering college freshman should be able to demonstrate mastery. The task force defined over 200 skills for which an entering college freshman needs to demonstrate mastery. The skills were considered minimal for success in the freshman year. The skills were formulated in terms of behavior specifications (Scandura, 1966, 1973, 1976, 1977) and represented minimal survival skills for entering freshman (Borden, et al, 1979; Hashway, 1981). The over 200 objectives were organized in terms of twelve domains: Synonyms, Synonyms in Context, Definitions in Context, Affixes, General Comprehension, Reading Techniques, Interpretive Comprehension, Development of Purpose, Recall, Textbook Study, Locating Information, and Dictionary Usage. Each of the objectives was organized in terms of a reading taxonomy which consisted of over 60 modules. The learning modules were organized in terms of the twelve units described above. Empirical evidence supporting the organization has been available for some time (Davis, 1944; Harris, 1948; Johnson, 1949; Thurstone, 1946).

For each module, the terminal behaviors, the particular stimulus-response associations that a student must demonstrate in order to indicate mastery of each module or as Bloom (1980) has dubbed cognitive entry skills, were identified. Several test items were developed for each terminal behavior using the techniques described by Bormuth (1970). Items were randomly selected from each item pool and randomly assigned to positions on the test. The test reliability ranged from 0.90 to 0.93 for each of the six alternate forms and each subscale exhibited a high degree of validity (Hashway, 1980a, 1980b, 1981). The Missouri College English Test (Callis & Johnson, 1965) was selected because it contained well defined terminal performance behaviors and criterion referenced interpretations were possible for each of seven domains: Capitalization, Grammar, Paragraph Organization, Punctuation, Sentence Structure, Spelling and Verb Usage.

The sample consisted of 13,500 entering freshman in the Massachusetts State College System. The instruments were administered during freshman orientation. The results of this study were based upon module level test scores. The students, based on sex, age and SAT distributions were representative of freshman found across the nation.

The 19 domain scores were subject to a principle components factor analysis. The results of the factor analysis reflected a unifactorial structure with an eigne value of 5.68 explaining over 47% of the variance and a generalizability coefficient of 0.97. Since only one factor existed in the data, the same scaling technique could be applied to all 19 domain scores and each domain could be measured on the same scale. Thurstone's (1927) successive difference scaling technique was used to examine the student test scores and resulted in interval scale assignments of units to factors. The scale assignment is a measure of the achievement reflected by mastery of that skill (how easy or hard the domain was to master) and resulted in standardized distances as so that statements could be made concerning the order of skill mastery. An empirically based hierarchical ordering of reading, writing, language arts and study skill tasks was derived.

Results & Discussion

A unifactorial structure emerged and each of the domains was assigned scale values on that factor. The numbers in Figure 1 indicate the probability of mastering each skill area given that the prerequisite skills have been mastered.

The network does not reflect the classical linear ordering by which reading and writing skills are commonly taught today it represents a gradual transition from basic information access and retrieval skills through processes for the decoding and assimilation of that information.

The data indicates that basic memory skills, simple recall of facts, are primary language arts skills. Students who can not retain information in short term memory will experience reading and writing difficulties. The primary reading and writing task is the encoding of textual information.

Insert Figure 1 about here

The first primary process, called the logical decoding process, is the ability to logically sequence events, identify purpose and intent as well as the main idea and locate information sources. That process seems to be the first stage in decoding information into basic elements for later processing.

Following the acquisition of memory and logical decoding processes, it seems that one of four elementary processes come into the language arts scenario. It is suggested that the particular process which is engaged depends upon the nature of the particular reading situation. In certain circumstances, more than one process may be required. The student is ready to learn how to identify major and minor details, an author's intent, the definition of a word in context, and to use a dictionary. After learning those skills, the student is ready to learn the last primary process which we have called textbook study. Each of the primary processes elaborate and further decode the contents of short-term memory acquired via the recall function and must draw on long-term memory data to complete its function.

Following the mastery of the primary processes, the student will be ready to work on the development of secondary processes: general comprehension, synonyms in context and verb use. The process we call general comprehension draws heavily upon long-term memory and its associations. It is clear why so much processing must occur before generalized comprehension occurs and/or before a comprehensible document is produced.

After the mastery of the primary processes, the student can begin to learn the concept of synonyms in context and formulate sequences as well as action steps via verb use. Since a contextually defined synonym relies upon the intent of the sentence, previously stored vocabulary and to a lesser extent the contextual environment of the sentence, it seems that a large number of skills need to be acquired and preprocessing steps executed prior to decoding synonyms defined in context or determining appropriate verb usage.

Students who have high degrees of proficiency with locating information sources, grammar and the use of affixes are also those students who have acquired a high degree of proficiency in the use of all subsequent skills. We believe that this is so because the location of information sources as well as the use of affixes and grammatical structures require much more experience with the written word. Students who have read and written on a wide range of topics will be better able to identify appropriate information sources dependent upon context and will be more familiar with the use of complex linguistic structures such as grammar and affixes than those with limited reading and writing backgrounds and long-term memory stores.

The purpose of this study was to identify an optimal sequencing of language arts and study skill tasks. A hierarchy or sequence of those tasks which optimize the transfer of learning has been identified in terms of memory and primary/secondary processes. The hierarchy corresponds to a developmental hierarchy defined not in terms of age, but, in terms of skill acquisition. More importantly, this study may lead to a model of language arts and study skills acquisition and hierarchy methodology which will stimulate further research and intensive elaboration of the basic model in terms of the subprocesses and tasks involved in each of the major processes identified.

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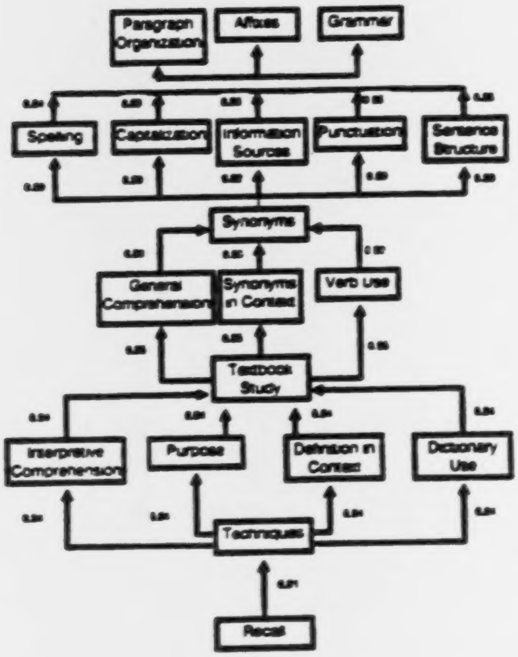
APPENDIX

Language Arts Learning Network


Paragraph Organization
Affixes
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Verb Use
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Behavioral Anchoring and Ordering Theory:
Bases for Syllabus Design

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Various approaches exist for designing college-level reading comprehension syllabi. Two of the commonly employed approaches are the linear syllabus and the cyclical syllabus. The former approach entails presenting each of the comprehension skills in a linear order based on some notion of incremental or linguistic difficulty. The latter approach invites the instructional designer to present the skills in a cyclical fashion in the following respect. All skills are presented first at their most elementary level of complexity. During the next pass, the skills are revisited again but in a more complex manner. The complexity of subsequent presentations increases with each presentation.

This paper suggests the use of two approaches to syllabus design for college-level reading comprehension instruction--behavioral anchoring and ordering theory. Each approach will be described in terms of implementation and in terms of how it can inform syllabus design. The paper concludes with a discussion of the use of inference training, text mapping, and adjunct questions as useful strategies to be incorporated into reading comprehension syllabi derived from behavioral anchoring and ordering theory.

Behavioral Anchoring

Behavioral anchoring was recently developed by the National Assessment of Educational Progress (Wessick, Beaton, & Lord, 1983; National Assessment of Educational Progress, 1985). Its purpose is to provide a basis for a description of what students at different points on the scoring continuum do that students at the lower anchor points do not do. Crucial to behavioral anchoring is the identification of those test items that are determined to be robust discriminators between previously determined anchor points on the scoring continuum. Those items which are found to discriminate between pairs of adjacent anchoring points are batched. Those batches of items are described, and from these descriptions it is possible to generalize to different classes of accomplishment. Syllabi can then be designed to accommodate the different levels of accomplishment.

Method for Behavioral Anchoring

The following method for conducting behavioral anchoring studies is based on the procedures presented by Beaton (1985). The first step is to select anchor points on a reading comprehension test's scoring continuum at which items can be found that discriminate between what students at each anchor point do that students at lower points on the scoring continuum do not do. This first step can be implemented by submitting the item responses to the Rasch item response theory model (Wright & Stone, 1979) to generate estimates of person ability for each student and estimates of item difficulty for each item. The second step is to determine the probability that students at one previously determined anchor point did answer correctly a batch of items that students at the next lower previously determined anchor point did not answer correctly. This batch of items could then provide the basis for developing a tailor-made reading comprehension syllabus for the students at lower anchor points on the scoring continuum.

The Rasch model generates a unit of measurement called a logit, which is a general mathematical unit used to calibrate person ability and item difficulty. Positive logits of person ability indicate high ability; negative logits of person ability, low ability. Positive logits of item difficulty indicate high item difficulty; negative logits of item difficulty, low item difficulty.

The Rasch model uses logits to determine the probability of a person having X estimated latent ability succeeding on an item with Y estimated difficulty. Person ability logits and item difficulty logits represent person positions and item positions on the shared underlying latent variable. The probability of person X's success with item Y is determined by the difference between person ability and item difficulty. If person X and item Y are equally matched in logits, the probability of success on the item is .5. If person X has more latent ability than item Y requires, the probability of success is greater than .5. If person X has less latent ability than the item requires, the probability of success is less than .5.

Perkins and Brutten (1988) reported a behavioral anchoring analysis of reading comprehension measures the results of which indicated that readers with higher person ability exhibited competence with items that dealt with micropropositions found in the lower two thirds of a Meyer (1975) total content structure analysis. Readers with lower person ability showed competence with items that dealt with macropropositions found in the upper one third of such an analysis. In addition readers at the higher ability levels excelled with those items whose keyed responses depended on implicit sources of information or on explicit sources of information that appeared with a lower frequency; Perkins and Brutten reported that this was not the case for readers at the lower person ability level.

Results from the Perkins and Brutten (1958) study could be used as the basis for tailoring a customized reading comprehension syllabus for the lower ability readers who could profit from more explicit instruction and practice on content structure at the microproposition level and on the comprehension of items that hinge on implicit sources of information. In the section that follows two examples of items based on micropropositions and one example of an item which was derived from an implicit source of information will be illustrated. These examples could be used as the basis for developing a sequence of lessons especially designed for the lower ability readers mentioned in Perkins and Brutten's (1988) research.

Instructors who wish to teach content structure could use Meyer's (1975) prose analysis system as a guideline for showing their students how reading comprehension items are related to the various levels of the structure of a text, including of course the microproposition level. Meyer's (1975) content structure, which relates all of a text's information and shows how some ideas are superordinate to others, has two distinct levels: (1) the top-level structure, termed a macroproposition, (a) consists of the rhetorical organization that binds together all the propositions in a text and gives it overall organization and (b) contains the gist, the main ideas, and the text's message; and (2) the bottom-level structure, termed a microproposition, contains the major supporting details that complement the major premises of the text's message. There may also be a third level containing very specific, minor details. The rhetorical relationships mentioned with regard to the macroproposition level fall into five major groups: antecedent/consequent (cause and effect); comparison; collection; description; and response.

Knowledge of content structure, or formal schema as it is frequently referred to, is a necessary component for global comprehension. An explication of the microproposition level of content structure is especially important, for, as Meyer and Rice (1984) have noted, "ideas which are located at the top levels of a structural analysis of prose are recalled and retained better than ideas which are located at the lower levels," and "items of information located high in the structure are more likely to be integrated in memory than items located low in the structure" (p. 329).

Figure 1 presents a content structure for "Biological Clocks" in Ackert's (1987) Cause and Effect. Intermediate Reading Practice. The exercises which accompany "Biological Clocks" contain a series of comprehension questions one of which is the following inference question based on a microproposition, "Why should you have breakfast at breakfast time in the new time zone on the day you leave?" In order to infer the correct answer, the readers must comprehend the disconcerting effect upon one's internal rhythm caused by flying from one time zone to another. The answer to the inference question concerns a means to "reset" one's biological clock by changing one's eating habits. The rhetorical organization of the passage is cause and effect with some of the effects subsequently serving as causes for additional effects. If the content structure presented in Figure 1 were formally taught, the readers could glean a better understanding of the content and formal structure of the text thereby removing some of the major roadblocks to comprehension and providing sufficient access to text meaning and structure. Once the troublesome roadblocks to comprehension have been removed, the readers should be more sufficiently equipped to draw inferences from explicit and implicit sources of information in the text.

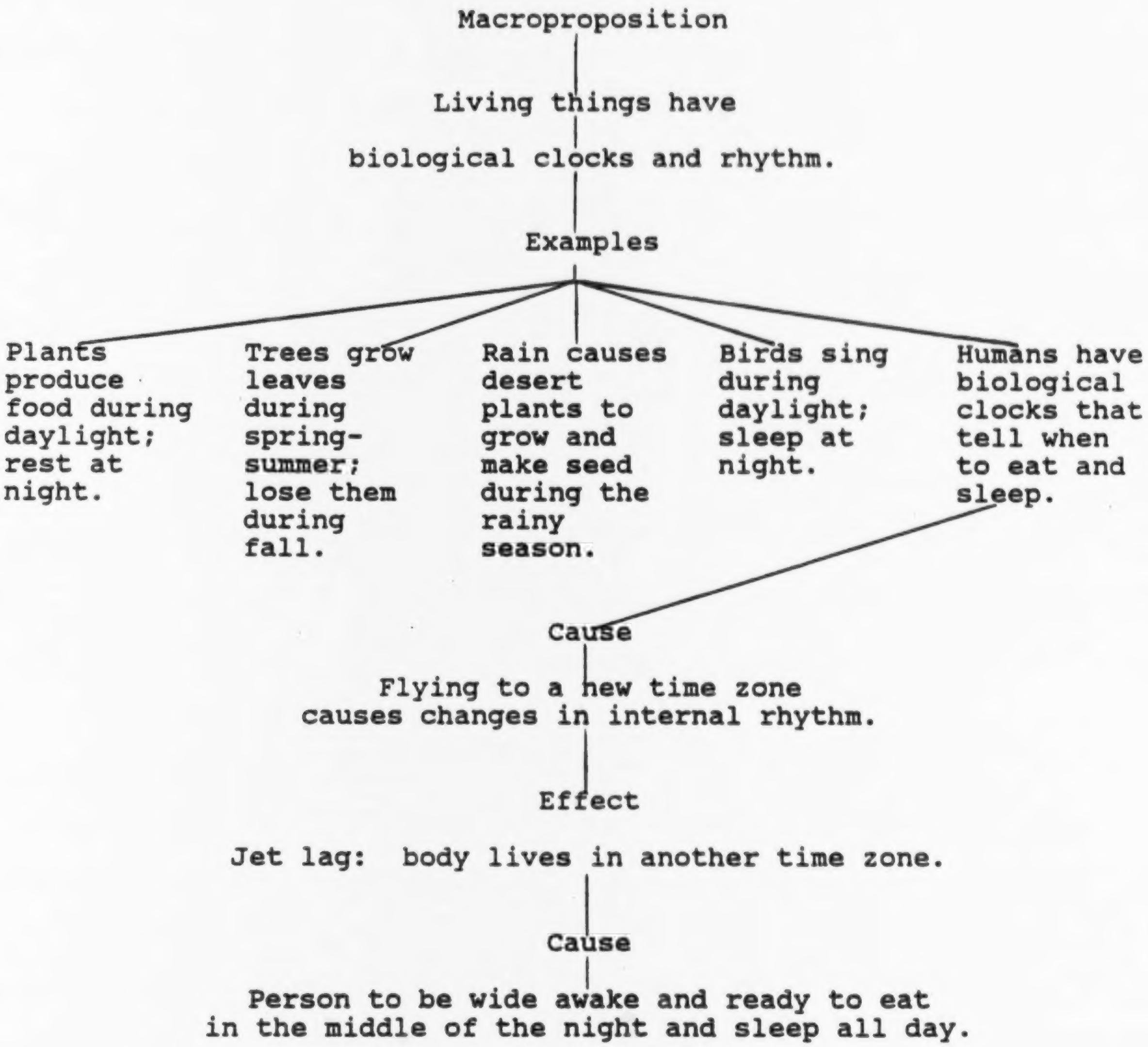

Macroproposition
Living things have biological clocks and rhythm.
Examples
Plants produce food during daylight; rest at night.
Trees grow leaves during spring-summer; lose them during fall.
Rain causes desert plants to grow and make seed during the rainy season.
Birds sing during daylight; sleep at night.
Humans have biological clocks that tell when to eat and sleep.
Cause
Flying to a new time zone causes changes in internal rhythm.
Effect
Jet lag: body lives in another time zone.
Cause
Person to be wide awake and ready to eat in the middle of the night and sleep all day.

Figure 1. "Biological Clocks" Content Structure

The following text passage and corresponding test items provide another example of how test items can be derived from micropropositions. The passage illustrates an antecedent/ consequent (cause and effect) rhetorical relationship. The reason why a house may explode during a tornado was a microproposition in a much large description of tornadoes. The rhetorical purpose of the entire text, of which the following paragraph was one of purpose of five, was to relate various attributes of a tornado. One accrued advantage of teaching content structure is that it is possible to show how a single text can contain various rhetorical relationships and that a given microproposition can have a different rhetorical relationship than the larger macroproposition into which the smaller microproposition is embedded.

> The whirling winds of the tornado are so strong that they can lift horses, cows, and even cars off the ground. They break trees and destroy homes and other buildings. Inside the spinning winds of the funnel is an area of very low pressure. This low pressure may cause houses to explode as the funnel moves through an area. Although a tornado may affect only a small area (about one-and-a-half kilometers in width), it moves at a speed of one-hundred kilometers per hour toward the northeast.

> A tornado hits a house and the house explodes. According to the passage, why?
>
> a) Houses are not made strong enough.

b) The heavy rain destroys the house.

*[c) The air pressure inside a tornado is much lower than the air pressure inside the house.]

d) Tornadoes break down and lift cars, which then fly against the houses.

(Center for English as a Second language, 1980.)

The following text and associated test item illustrates a type of test question for which there is no explicit source of information available in the text which the readers could have used to answer the question. For readers who need focused instruction on vocabulary items having no explicit source of information in the text teachers can demonstrate how readers can use their previous knowledge of a semantic network of vocabulary that includes, for the following example, flesh, meat, burger, and sandwich to answer the question correctly.

> No single adjective is adequate to describe the size of the blue whale, and few people realize how it compares with other mammals. By any standard, one of its fins would fill the cargo space of the average dump truck. Although its skull is the size of a car, its brain is only the size of a carburetor. Its heart is so large that five strong men would be needed to lift it, while its skin could be used as a tarpaulin to cover half a football field. If you combined the weights of 100 horses, 100 dairy cows, and 5 Indian elephants, you would have the weight of the female blue whale. Fortunately

for the whale, its watery environment has protected it from the extinction suffered by the dinosaur millions of years ago.

In the paragraph above, the word flesh refers to

*[a) the whales' meat]

b) the whale's size

c) the shale's strength

d) the whale's weight

(Center for English as a Second Language, 1980).

Teachers can provide content structures for the reading passages found in their currently used texts, or if the existing texts do not inherently manifest sufficient micropropositions which can be utilized for the desired teaching objectives, then they can modify or utilize other textual sources. The same proposition holds true for exercises based on the semantic network of vocabulary. Reading teachers are accomplished crafters of supplementary exercises. In sum, the purpose of this section of the paper was to provide examples of passages and item types for which a sample of lower ability readers need additional instruction and practice.

Ordering Theory

Ordering theory is a procedure that can be used to determine whether the mastery of one skill/ability is a prerequisite to the mastery of two or more other skills/abilities, or conversely, whether the mastery of two or more skills is a prerequisite to the mastery of one higher-order skill. Airasian and Bart (1975) define ordering theory as:

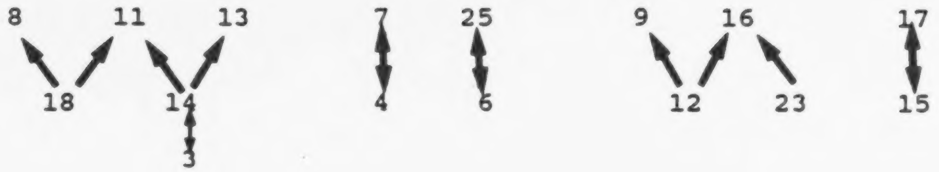
> an approach to fundamental measurement which has as its intent the definition of the best fitting linear or non-linear hierarchial network among a series of tasks...a deterministic measurement model which uses task response patterns to identify both linear and non-linear qualitative, prerequisite relations among tasks or behaviors. (p. 166)

Bart and his colleagues consider task A to be a prerequisite to task B to the extent that the (01) response pattern does not occur, where 0 represents a "fail" on task A, and 1 represents a "pass" on task B. The (01) response pattern is disconfirmatory to the extent that a correct response for task A is a prerequisite to a correct response for task B. As Bart and Krus (1973) have noted, the (00), (10), and (11) response patterns are confirmatory for the defining statement specifying the prerequisite relationship: success on task A is a prerequisite to success on task B if and only if the response pattern (01) for tasks A and B respectively does not occur. Ordering-theoretic procedures per se do not indicate whether an identified prerequisite relationship occurred by chance or not. Bart and Read (1984) developed such a statistical test to assess the strength of identified prerequisite relationships and to determine whether they could have occurred by chance alone.

The Study

The authors of this paper conducted an ordering-theoretic study of an English as a Second Language reading comprehension class for the purpose of demonstrating how ordering-theoretic data could be used as the basis for syllabus design. The class involved consisted of 12 reading students who had been placed into a lower-intermediate level of reading instruction. At the end of an eight-week period of instruction, the readers sat for an examination containing 25 multiple-choice questions, each of which required a single correct response. The examination contained five sections: (a) a 409-word passage about early groups of settlers in the United States, followed by 10 questions; (b) a section of a newspaper classified advertisements for apartments, houses, and mobile homes, followed by 4 scanning questions; (c) a 131-word passage about volcanoes, followed by 4 questions; (d) a 132-word passage about color, followed by 5 questions; and (e) a 171-word passage about the differential effects of gravity upon bodies, depending on the location of those bodies on the earth, followed by 2 questions.

A contingency table was constructed for each of the 600 (25 x 25 - 25 = 600) item pairs, and a zero tolerance level was established; if, for any item pair generically labelled AB, a single occurrence of an (01) response pattern was found, the prerequisite relationship that success on task A is necessary for success on task B was disconfirmed for that particular item pair.



Success on item 18 is necessary for success on item 8.
Success on item 18 is necessary for success on item 11.
Success on item 14 is necessary for success on item 11.
Success on item 14 is necessary for success on item 13.
Success on item 12 is necessary for success on item 9, etc.

Figure 2. Significant Prerequisite Relationships

3. Factual
4. Factual
6. Factual
7. Paraphrase
8. Paraphrase
9. Inference
11. Factual
12. Factual
13. Factual
14. Factual
15. Factual
16. Inference
17. Inference
18. Factual
23. Factual
25. Inference

Figure 3. Item-skill Identification

Prerequisite relationships were identified for 154 of the 600 item pairs. Of those 154 identified prerequisite relationships 13 were significant at the .01 level. Figure 2 presents the significant prerequisite relationships; Figure 3 presents the skills assessed by the items among which significant prerequisite relationships were identified.

For the purposes of this paper the authors utilized the skills definitions provided by Andre (1979):

> Factual questions typically ask the reader to supply or recognize some item of information given in the passage. Factual questions are typically primarily verbatim. Types of information requested have included names, numbers, dates, definitions, terms, etc. Paraphrased questions are factual questions written with no substantive word overlap between text and questions. Inference questions require a reader to state a relationship between elements of the passage that is implied but not explicitly stated in the passage (p. 282).

Relationships shown in Figure 2 indicate that success with factual items was necessary for success with paraphrase and inference items. Also, Figure 2 suggests that these readers mastered verbatim factual skills, but need additional instruction, practice, and direct feedback with paraphrase and inference skills.

Syllabus Design

There are at least three instructional approaches that could be incorporated into a syllabus for this particular sample of readers who need explicit instruction on inference skills. The first suggested approach is metacognitive awareness training reported by Pearson and Gallagher (1983). This particular inference training strategy involves teaching readers to distinguish between questions the answers for which (1) are found verbatim in the text, (2) must be inferred because they are not explicitly stated in the passage, or (3) must be answered from the reader's store of previous knowledge. Pearson and Gallagher respectively labeled these questions RIGHT THERE, THINK AND SEARCH, and ON MY OWN. The readers in this study who were shown to be deficient in inference skills could be taught to apply the strategy to longer and longer passages. The readers would be asked to indicate which strategy they had employed to answer each question. Pearson and Gallagher recommended a Model ----> Guided Practice ----> Independent Practice ----> Direct Feedback instructional design.

A second strategy to be incorporated into the syllabus is text mapping:

1. Ideas might be examined by first isolating the essential understanding students are expected to derive from a text, then examining the extent and nature of support for these understandings provided within the idea units of a text. Where a text has a more poetic or aesthetic intent, this might entail a more thematic analysis of ideas.

2. Relationships between ideas might be evaluated in terms of the probability with which ties are readily understood. A measure of the ambiguity, vagueness, or obscurity of ties and connectors might be the interpretation for the text. This implies that such factors as context,

background knowledge, and reader purpose should be considered when evaluating whether or not a tie works.

3. The structural qualities of expository text might be examined in terms of the ease with which ideas can be mapped hierarchically and relationally. That is, teachers might examine the structural integrity of a text in terms of the extent to which a text and the important ideas therein can be easily fitted to a flow chart, tree diagram, or even an outline.

4. The structural qualities of a narrative might be assessed in terms of the extent to which stories display conflict, incorporate reasonable characterization, and develop a worthwhile plot. It is as if a story should be examined against the reader's expectations relative to whether a story is worth reading.

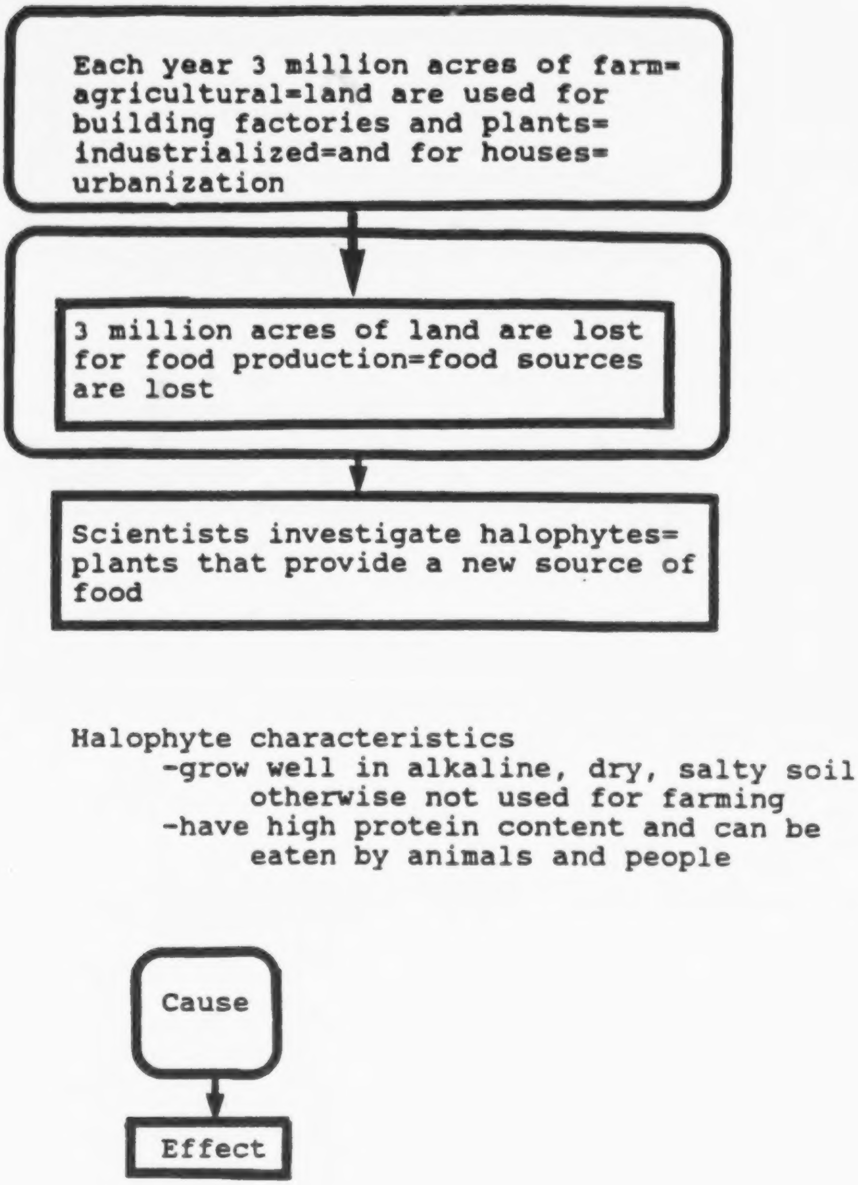

Each year 3 million acres of farm=agricultural=land are used for building factories and plants=industrialized=and for houses=urbanization
3 million acres of land are lost for food production=food sources are lost
Scientists investigate halophytes=plants that provide a new source of food
Halophyte characteristics
-grow well in alkaline, dry, salty soil otherwise not used for farming
-have high protein content and can be eaten by animals and people
Cause
Effect

Figure 4. Halophytes Text Map

The last procedure to be suggested for inclusion into the syllabus for readers who haven't mastered inference questions is adjunct questions. The adjunct question paradigm involves the interspersing of questions into a reading passage

> contiguous to the material to which they relate. Typically, one or two adjunct questions are inserted either before (prequestions) or after (postquestions) a segment of one or two pages of text. Questions and text segments appear on separate sheets of paper and the reader is not allowed to turn back to a page once it has been turned, nor allowed to take notes while reading. After reading the entire passage, examination is then made of the amount of questioned (intentional) and nonquestioned (incidental) passage material retained by the readers" (Rickards, 1979, p. 181).

According to Andre (1979), higher-order adjunct questions "direct students to attend to more of the material and, thus, to recall information directly related to the information needed to answer the questions" (p. 287).

Figure 5 presents two higher-order adjunct inference questions to accompany the text also contained in the figure. The assumption underlying the proposal of these two questions is the following. If readers are confronted by a comprehension task such as an inference question which entails the processing of more information than they can easily assimilate with a limited processing capacity, they will selectively attend to only those aspects of the text that they perceive as necessary to accomplish the task. Andre (1979) noted that adjunct questions alter the readers' perceived task by directing their attention to the relevant portions of the text necessary to answer the question.

The suggested adjunct questions, "Why should gardeners be advised to 'plant' earthworms in their gardens?" and "Why are earthworms more efficient producers of topsoil than nature?" alert the readers to attend to those portions of the text that explicitly or implicitly supply answers. It could be suggested that adjunct questions serve as a type of semantic priming for answering questions in psychological terms.

The readers who served as subjects for the ordering theory study were scheduled to use Zukowski/Faust, Johnston, & Atkinson's (1983) Between the Lines during their next term of instruction. The Zukowski/Faust et al. text contains fifty different kinds of exercises designed to develop the following specific reading skills:

> skimming and scanning; figuring out word meanings from context clues; extracting the main idea of a paragraph or reading; judging and applying the thoughts of the author; guessing at word meanings intelligently; understanding the logical arrangement within a reading; comprehending the types of

> organization that are available in English; using the focus words and structures in a controlled writing situation; and analyzing a reading to understand the structure. (p. v-vi)

The results of the ordering theory study indicated that this sample of readers had already mastered many of the aforementioned skills, but needed additional instruction and practice on drawing inferences for which there are no instructional approaches in the Zukowski/Faust text such as those suggested above. The principal advantage of ordering theory is that it allows the reading teacher to identify those skills for which additional instruction is needed. The results of an ordering theory study permit the teacher to fit the curriculum to her students and not vice versa. As a result there should be more time spent on the previously unmastered skills and consequently, the efficiency of instruction should increase as well as time on task for the reading skills that need remediation. The results of the ordering theory study described in this paper indicated a need for more inference training; three suggested approaches were offered for consideration to address inference training.

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Appendix A

Halophytes Text

In 1980 a report was released by an agency of the United Nations. The report shocked and alarmed many people because it spelled out, in very clear terms, the rapid rate at which agricultural land is disappearing all over the world. In the United States alone, an average of three million acres (approximately 1.1 million hectares) of prime agricultural land is lost to industrialization and urbanization every year. With more and more people to feed, the world can neither afford to allow a decrease in food production nor afford to ignore a potential source of food. Recognizing these facts, scientists are investigating halophytes.

Halophytes are plants with characteristics that promise to help keep the balance between food production and population growth. The first of these characteristics is that halophytes grow well in alkaline soil, soil that is high in salt content. This characteristic is important because halophytes can be cultivated on land that is not ordinarily used for other purposes or on land that has become too salty for cultivation. For example, land in the Mexicali Valley in northern Mexico has become unproductive. This land is fed by Colorado River water, which is used so extensively that by the time it reaches the Mexicali Valley, it is very salty. As a result of irrigating with this salty water, some of the land in the valley will no longer support conventional food crops such as wheat. Yet halophytes thrive in the salty soil.

A second significant characteristic of halophytes is that they grow well in areas with too little water to be used for other crops. They can, therefore, make desert land productive. Two other important characteristics of halophytes are their high protein content and the fact that they are edible. These traits are important because they make the plants a potential source of nutritious food for both animals and plants. The halophytes salicornia and atriplex have been used in processed foods such as cereals and snack crackers on an experimental basis. The consumers expressed satisfaction with the taste and appearance of the food items. Commercial marketing of halophyte food products, however, is not yet a reality.

Halophytes must still prove their potential. Scientists are not sure that these plants will be practical to cultivate. However, halophytes may be one of many strange plants in the everyday diet of future generations.

(Zukowski/Faust, Johnston, & Atkinson, 1983, pp. 110-111).

Success Indicators of a Reading and Study Skills Course for College Freshmen

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"College: The Undergraduate Experience in America," (The Chronicle of Higher Education, 1986) a report issued by the Carnegie Foundation for the Advancement of Teaching, stresses the need for strengthening the quality of the four-year undergraduate education in America. But, as the writer points out,

> The separation we found between high school and college has led to a mix-match, a disturbing one, between the faculty expectations and the academic preparation of entering students. Many young people who go to college lack basic skills in reading, writing, and computation--essential prerequisites for success (p. 16).

This need to strengthen entering college students' basic skills has long been recognized and documented by educators (Grant & Hoeber,1978; Haase & Caffrey, 1983; Judd, 1985; Roueche, 1981) and is currently being addressed in a variety of ways by 60 percent of the colleges in this country (Sanders, 1980).

With so many colleges offering courses to strengthen students' basic skills, it is only natural that research into the effectiveness of various programs has been conducted. Although it is difficult to ascertain the exact nature of all courses being studied, review of individual studies (King, 1979; Noel & Levitz, 1982; Staley & Smith, 1979; Usova, 1979), as well as two extensive reviews of research in the field of skills development (Kirchenbaum & Perri; Sanders, 1980), indicate that generally students who participate in multi-component skills development programs that contain reading and study skills instruction and some form of personal values clarification training make statistically significant gains in terms of academic success as measured by grade point average while students participating in single component programs (just reading or just study skills (are less likely to demonstrate improvement in GPA.

In light of the need to strengthen students' academic skills, and the observation that the most effective method to accomplish this is through a multi-component approach, the current study was initiated to attempt to assess the effectiveness of the course Reading & Study Skills in enhancing students' academic success. First, the study covers a five-semester time period, longer than found in most studies (Hunter, 1975; King, 1979; STaley & Smith, 1979; Usova, 1979), thus allowing a more accurate insight into the long term effectiveness of study skills training. Second, the study examines not only the performance of the entire sample, but also examines the academic performance of students who follow the traditional enrollment pattern of consecutive enrolment and the performance of students who "stop out," those students with intermittent enrollment patterns. Due to the urban nature of the university where the research was conducted, it is not uncommon for students to attend college several semesters, drop out for one or two semesters, and then enroll again.

Program Description

Personal Development 160 - Reading & Study Skills is an elective, 3 hour, non-graded, credit course taught at a state university, in the midwest. Students enroll in the course through self selection. Because the university is an open admission, urban institution, students' entering reading levels and academic skills vary considerably.

The course is designed to strengthen students' reading skills, both comprehension and speed, and to increase their study skills. Numerous timed reading materials and the reading shadowscope are used to increase reading speed; comprehension development is achieved through the use of such materials as Factual Literature, 6-Way Paragraphs, and Senior RFU cards; How to Study in College by Walter Pauk is the text used for study skills instruction.

The course consists of a minimum of 48 hours of instruction. The class meets three hours per week for 16 weeks. Class time is spent in group reading activities, individual reading laboratory work, and class discussion of study skills topics such as scheduling, text reading, notetaking, and studying for and taking tests. In addition to class time spent on individual reading assignments, students also spend from one to two hours per week working in the reading lab on individual assignments.

Method

The subjects for this study were all of the entering college freshmen who enrolled in the Reading and Study Skills Course, Fall Semester, 1982. There were 120 students in this category; they are designated as the Reading Sample. The College Random Sample was selected by using a computerized random system to select a manageable but statistically significant number of entering students from all those who enrolled in the Fall Semester, 1982. From the random sample, 73 students met the criteria of being entering freshmen and not part of the Reading Sample. The study began with the Fall Semester, 1982 and followed these two groups of students through Fall Semester, 1984 (five semesters).

To facilitate a more detailed examination of student performance patterns, both the Reading Sample and the college Random Sample were further classified based upon the criteria of the students having completed the five successive semesters covered by the study and the students who completed less than five semesters of college work. Of the Reading Sample, 49 students were classified as "5 semester," and 71 students were classified as "less than 5 semesters." Of the college Random Sample, 38 students attended the five semesters while 35 did not.

The subjects for the Reading Sample (N=120) were given the Nelson-Denny Reading Diagnostic Test, Form E, that measures reading rate, comprehension and vocabulary, and the Pictorial Reasoning Test (PRT) which is a non-verbal test of students' reasoning abilities. In addition to the scores on the scores on the Nelson-Denny Reading Diagnostic Test, Form E, and the PRT, the scores entered as data for this study include all five ACT scores (English, Math, Social Science, Natural Science, and Composite). For the purpose of measuring academic performance the following information obtained from the Reading Samples' college transcripts was recorded: hours taken for credit only, credit hours attempted, credit hours earned, grade points, grade point average for each semester completed, and cumulative grade point average.

In order to have a basis for comparison between the Reading Sample and the College Random Sample, the data recorded for the College Random Sample (N=73) included: ACT scores (English, Math, Social Science, Natural Science, and Composite), hours taken for credit only, credit hours attempted, credit hours earned, grade points, grade point average for each semester completed, and cumulative grade point average.

Findings

The first consideration in this study was to identify basic characteristics of the Reading Sample and of the College Random Sample. In order to compare the entering skills/

knowledge of the two groups, their mean ACT Standard Scores were examined. (See Table 1).

Table 1

Mean Act Scores

	Reading Sample			College Random Sample		
	5 sem	Less than 5 sem	Total	5 sem	Less than 5 sem	Total
ACT English	15.2	14.2	14.7	18.2	15.9	17.2
ACT Math	13.9	11.0	12.3	19.6	13.5	17.0
ACT Social Science	13.8	14.0	13.9	20.1	17.1	18.0
ACT Natural Science	17.3	18.3	17.8	22.8	17.6	20.6
ACT Composite	15.2	14.5	14.8	20.2	15.7	18.3
N	49	81	120	38	35	73

When considering the mean ACT Standard Scores, the Reading Sample scored lower in all areas (English, Math, Social Science, Natural Science and Composite) than did the College Random Sample. The mean Composite ACT score for the Reading Sample was 14.8 (28%ile) as contrasted to a mean Composite score of 18.3 (46%ile) for the College Random Sample, a difference of 3.5 (18%ile).

In all but one instance the same pattern emerges when the Reading Sample and the College Random Sample are divided into students attending five semesters and those attending fewer than five semesters. The College Random Sample sub-groups had higher ACT scores than did the Reading Sample sub-groups. The exception occurred in the area of the ACT Natural Science score. The Reading Sample sub-group that attended less than five semesters scored higher than did the "less than 5 semester" sub-group of the College Random Sample.

One difference between students who attended college for the five semesters covered by the study and those students who did not attend five semesters can be found in ACT Standards scores. In a majority of cases, the students who attended college five consecutive semesters scored higher on the ACT than did those students who attended less than five semesters. The exception is found in the Reading Sample "less than 5 semesters" sub-group. This group scored higher on the Social Science portions of the ACT than did the Reading Sample students who attended five consecutive semesters.

A second characteristic of the two groups was the enrollment pattern that emerged after the initial semester of the study. The College Random Sample had a higher percentage of students who enrolled in course work for the five consecutive semesters (52%) of the study than the Reading Sample (40.8%).

In an attempt to determine the effectiveness of Reading & Study Skills course in enhancing students' academic success, two areas of achievement were considered: grade point average and number of credit hours per semester completed (See Table 2).

Table 2

Mean Grade Point Average

	Reading Sample			College Random Sample		
	5 sem	Less than 5 sem	Total	5 sem	Less than 5 sem	Total
GPA Fall '82	2.54	1.89	2.13	2.78	1.62	2.22
GPA Cumulative	2.53	1.91	2.15	2.71	1.66	2.21
N	49	71	120	38	35	73

The College Random Sample's mean grade point average for the first semester of the study was .09 higher than the mean GPA of the Reading Sample. After the five semesters covered in the study, the mean cumulative GPA of the College Random Sample was .06 higher than the comparable score of the Reading Sample. When examining the grade point averages of the various sub-groups, students in the College Random Sample performed better than the Reading Sample students in the "5 semester" category but not as well as in the "less than 5 semester" category. In this instance the Reading Sample's sub-group's mean GPA was 1.91 as opposed to a mean GPA of 1.66 for the College Random Sample sub-group. Both the Reading

Sample and the College Random Sample sub-groups that attended less than five semesters had lower GPAs for their initial semester and for their cumulative average than did the sub-groups attending five consecutive semesters.

As a second measure of performance, a comparison was made between credit hours earned by the Reading Sample and credit hours earned by the College Random Sample. (See Table 3). For the initial semester of the study, the students who enrolled in the course attempted an average of 7.7 hours of course work and earned credit in an average of 7.2 hours while the students in the College Random Sample attempted an average of 14.0 hours and earned credit in an average of 10.5 hours. By the fifth and final semester of the study, the Reading Sample attempted an average of 11.4 hours and earned credit in an average of 10.6 hours. The College Random Sample attempted an average of 11.0 hours and earned credit in an average of 10.6 hours.

In assessing the characteristics of students with consecutive enrollment and those with nonconsecutive enrollment, the Reading Sample and the College Random Sample sub-groups with consecutive enrollment enrolled in and completed more credit hours of course work than did the sub-groups who attended less than five semesters.

Table 3

Hours Attempted and Hours Earned

	Reading Sample			College Random Sample			
	5 sem	Less than 5 sem	Total	5 sem	Less than 5 sem	Total	
Fall 82	8.6	7.1	7.7	14.6	13.4	14.0	Hours Attempted
	8.6	6.3	7.2	14.4	7.7	10.5	Hours Earned
Spring 83	11.5	10.1	10.8	14.3	7.9	12.2	Hours Attempted
	11.4	8.1	9.7	13.9	6.0	11.3	Hours Earned
Fall 83	11.3	8.6	10.3	14.4	7.9	12.2	Hours Attempted
	11.1	7.3	9.7	14.0	3.8	11.9	Hours Earned
Spring 84	10.8	7.0	10.6	15.0	7.6	14.1	Hours Attempted
	10.4	5.5	10.2	14.2	6.2	13.2	Hours Earned
Fall 84	11.7	7.6	11.4	11.4	8.6	11.0	Hours Attempted
	11.1	5.3	10.6	11.2	7.1	10.6	Hours Earned
N	49	71	120	38	35	73	

During the fifth semester of the study, the Reading Sample sub-group with five semesters of enrollment earned an average of 11.1 hours of credit, the Reading Sample sub-group who attended less than five semesters earned credit in an average of 5.3 hours of course work. The College Random Sample sub-group enrolled in consecutive semesters earned an average of 11.2 credit hours as contrasted to the College Random Sample sub-group with non-consecutive enrollment who earned an average of 7.1 credit hours.

The most significant observation that can be made in an attempt to assess the success of the Reading and Study Skills Course in improving the academic competencies of the students enrolled occurs when the data from Tables 1, 2, and 3 are combined. The mean Composite ACT Standard Score for the Reading Sample was 3.5 (18%ile) lower than the mean Composite ACT Standard Score of the College Random Sample. This could indicate that the students in the Reading Sample entered college with a lower skill/knowledge level than did the students in the College Random Sample. By the fifth semester of the study, the Reading Sample earned credit in the same number of hours of course work as did the College Random Sample, with a cumulative GPA of only .06 lower than that of the College Random Sample. This nearly identical performance by the Reading Sample and by the College Random Sample could well suggest the success of the materials presented in PD 160

- Reading & Study Skills in improving the students' academic skills.

The second consideration of the study, to gain insight into the performance of students with consecutive and non-consecutive enrollment, indicates that students who attended college less than the five semesters covered by the study tended to have lower ACT Standard Scores, enrolled in and completed fewer credit hours of course work per semester, and achieved a lower average GPA than did those students who enrolled in college consecutively for five semesters. The cumulative grade point average for both the Reading Sample and for the Reading Sample and for the College Random Sample sub-groups with less than five semesters was below 2.0 on a 4.0 scale (below the "C" level). It should be noted, however, that the Reading Sample sub-group's cumulative GPA (1.91) was higher than the cumulative GPA College Random Sample sub-group (1.66).

Summary

The findings of this study are significant for several reasons. First, the time encompassed by the study (five semesters) and the number of students in the Reading Sample (120) make possible a more comprehensive analysis of the performance of students enrolled in a reading and study skills course than is generally found in research. Second, the division of the Reading Sample and the College Random Sample into sub-groups of students who enrolled consecutively and those who did not allows insight into the differences in the academic performance levels of the two groups of students. Finally, the academic achievement of the Reading Sample, as measured by grade point average and the number of credit hours completed per semester, suggest the long-term value of the multi-component approach of the Reading and Study Skills Course in enhancing students' academic performance.

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What Do College Students Learn From and About an Innovative Vocabulary-Learning Strategy?

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The purpose of this paper is to bring to the attention of the reading-research community a useful technique for helping college students acquire the meanings of unfamiliar vocabulary words. The technique is known as a **mnemonic** or memory enhancing vocabulary-learning strategy. Relative to currently popular vocabulary-learning strategies, mnemonic strategies have been found to: (a) hasten the vocabulary-acquisition process, (b) foster superior long-term retention of word meanings, (c) enable more efficient lexical access in the service of vocabulary usage and text comprehension, and (d) constitute an information-processing strategy of great versatility. Regarding the last aspect, mnemonic strategies can be effectively applied to unfamiliar words in an English composition of literature course, to the unique technical terminologies of any number of college academic disciplines (including the biological and physical sciences) and to the totally foreign vocabulary of foreign-language domains (e.g., Levin, 1985; Levin & Pressley, 1985).

The immediate impetus for the paper derives from our having recently become aware of two issues in the field of reading: (1) the issue of innovative learning strategies for college students, which this publication addresses; and (2) a special "issue" of the *Journal of Reading* (Johnson, 1986) that was devoted entirely to vocabulary instruction. Ironically, the latter included articles supporting the various **semantic** approaches to vocabulary instruction (e.g., contextual analysis and semantic feature analysis). However, when these approaches have been subjected to careful scrutiny, they have not consistently demonstrated effectiveness for learning and remembering new vocabulary (Pressley, Levin, & McDaniel, 1987) -- despite claims to the contrary (e.g., Stahl & Fairbanks, 1986).[1] A second irony is that the inclusion of a potpourri of semantic strategies was accompanied by a total exclusion of the **mnemonic** approach, in spite of the documented finding that the latter is effective for vocabulary-acquisition -- whether in comparison to students' own preferred methods of study or in "head-to-head competition" with the various semantic approaches (Pressley, Levin & McDaniel, 1987). An additional ironic footnote to the 1986 **Journal of Reading** compendium is that the mnemonic omission occurred despite the fact that the editor of that special issue (Dale D. Johnson) was a primary contributor to a study comparing the mnemonic vocabulary-learning strategy with two semantic competitors of context and mapping. Neither context nor mapping was determined to be as effective as the mnemonic strategy (Levin, Johnson, et al., 1984).

Semantic Versus Mnemonic Strategies

Characteristics

Semantic vocabulary-learning strategies capitalize on a student's prior knowledge in order to relate the unfamiliar vocabulary word to known words and concepts. This is done through the use of such techniques as **semantic feature analysis** and **semantic mapping**, where the new vocabulary word is described or pictured or described in relation to, or in contrast with, familiar terms and concepts; and **contextual analysis**, where the new word's meaning is elicited, elucidated, or elaborated through the use of relevant context clues (see, for example, Johnson, 1986). Context clues may be either **internal** to the vocabulary word, as when the word's root is familiar; or **external** to it, as when familiar words, sentences, and paragraphs are provided to help a student infer or bolster the vocabulary word's definition (Sternberg, 1987). For example, to apply an external-context strategy (the one implemented in the present study) in order to learn the new vocabulary word **gunnel**, a type of fish, one could take advantage of the definition-enhancing italicized words in the sentence "The _pole_ broke when the powerful **gunnel** took the _bait_." Or, to learn that a **carlin** is an **old woman**, one could concentrate on **carlin** in the context of the sentence "The **carlin** _hobbled_ along with _her_ bag of groceries."

Mnemonic vocabulary-learning strategies, on the other hand, function to **create** a semantic relationship between the unfamiliar vocabulary word and that word's meaning, where initially none exists. Mnemonic strategies include three critical components, which Levin (1983) has referred to as the three Rs: recoding, relating, and retrieving. With the initial recoding component, the unfamiliar vocabulary word is transformed into a simpler, familiar, concrete proxy, or "keyword," using Atkinson's, 1975, terminology. Thus, **gunnel** could be recoded as **gun** and **carlin** as **car**. With the relating component, the keyword is then thematically connected either pictorially or verbally to the vocabulary word's definition. For **gunnel**, one might imagine someone shooting a **fish** with a **gun**; or for **carlin**, one might construct a sentence such as "The **car** was driven by an **old woman.**" The final retrieving component makes transparent how mnemonic strategies function successfully, assuming that both the recoding and relating components have been carefully constructed. In particular, there is now a systematic means of retrieving the definition from the vocabulary word -- via the keyword and the thematic interaction. For example, the word **gunnel** elicits the keyword **gun**, which in turn elicits the picture of a fish being shot by a gun, which leads to the definition **fish**. **Carlin** elicits **car**, which reminds one of an old woman driving a car, which leads to **old woman.**

Comparative strengths

We now consider semantic and mnemonic strategies in conjunction with the theoretical distinction between strategies that enhance **understanding** and those that enhance **remembering** (Levin, 1986). A vocabulary-learning strategy that enhances understanding is one that helps to clarify and elaborate a new word's meaning when the new word is initially introduced. Semantic strategies do exactly that, by providing conceptual connections and clarifying contexts against which the new word's meaning can be enhanced. However -- and this is critical -- semantic strategies generally do not facilitate remembering, in that although they enrich the new word's meaning in terms of familiar concepts, they do not strengthen the relationship between the new word and its definition.[2] That is, understanding something about a fish taking the bait and breaking a pole, or understanding something about an old woman hobbling along with a bag of groceries, is of no help when it comes to remembering which of the two descriptions was a **carlin** and which was a **gunnel** -- especially when many new vocabulary words are being introduced. Mnemonic strategies, on the other hand, are particularly well suited to the task of remembering. Remembering the **fish** being shot by the **gun** and the **old woman** driving the car clearly establishes which definition belongs with which vocabulary word.

More to the point, a plethora of empirical data provides solid support for the theoretical distinction between strategies for understanding and strategies for remembering (see for example Levin, 1986; Pressley et al., 1987). The two experiments reported later in this paper add to the literature on remembering the definitions of newly acquired vocabulary words. In particular, the research serves to bolster claims of superiority for mnemonic vocabulary learning over the currently more popular semantic-context approach. In each experiment we ask: (1) Which strategy is more effective for helping college students remember the definitions of new vocabulary words? and (2) Are students aware of the strategy that is more effective? In the first experiment, we wished to ascertain whether the relative efficacy of one strategy over the other: (a) depends on the order in which students experience them, and (b) is related to the degree of structure imposed on the strategy's implementation. In the second experiment, we sought to examine the strategy-efficacy question in a population of academically "at risk" minority college freshmen; we were particularly interested in the roles played by performance feedback and strategy experience in producing accurate metacognitive information.

Experiment 1

Method

Subjects and design. The subjects were fifty-two students enrolled in an introductory psychology course at a west-coast state university. The experiment was conducted as part of a larger study on the analysis of carryover effects, and only the experimental conditions relevant to the present research questions are included here. Subjects were given two successive lists of 18 vocabulary words to learn. A two-period crossover design was employed (Cotton, in press), such that for one of the lists subjects were instructed to use a context strategy, and for the other list they were instructed to use a mnemonic strategy (with strategy order counterbalanced). In addition, for half of the subjects, context sentences or keywords and to-be-imagined interactions (e.g., For **gunnel**: "Imagine someone using a **gun** to shoot a dangerous **fish**") were **provided** by the experimenter on both lists; and for the remaining subjects, the context sentences or keywords and interactions had to be **generated** by the subjects themselves. Apart from the issue of overall strategy effects, we were also interested in both the between-list effect of strategy order (context-mnemonic vs. mnemonic-context) and the possible moderating effects of strategy structure (provided vs. generated).

Materials and procedure. Subjects were randomly assigned in blocks to the four experimental conditions, with the subjects in each block tested concurrently in a laboratory room that contained separate carrels. The 36 vocabulary items were low-frequency concrete English nouns, many of which had been used in previous research (e.g., Pressley, Levin, & Miller, 1981). Each word either contained a ready-made concrete keyword in its first syllable (e.g., **gunnel**, **carlin**) or it was possible to derive one (e.g., **pie** from **pyrene**, **sheriff** from **shroff**). Items were randomly assigned to the two lists. Brief post-learning questionnaires were also constructed to assess subjects' perceptions of strategy efficacy and between-list transfer.

After receiving general instructions as a group, each subject separately read the specific instructions for his/her experimental condition. Two sample items were included to illustrate how the strategy for that list was to be implemented. In the provided conditions, students were told to read the sentence or keyword and suggested interaction that accompanied each vocabulary item (e.g., context: "The **carlin** hobbled along with her bag of groceries;" mnemonic: "Imagine a **car** being recklessly driven by an **old woman**"). In the generated conditions, students were told to construct an appropriate context sentence (or keyword and interaction) for each item. After four minutes of study, students were given three minutes to recall the definition of each randomly reordered vocabulary word. The procedure for the second study and test list paralleled the first, including the two sample items to illustrate the new strategy that the subjects would be applying. Following the second test, subjects were asked to fill out the questionnaire and were then thanked for their participation (for which they also received course credit).

Results and Discussion

Definition recall. Subjects' responses on the definition-recall tests were evaluated by two scorers. Scoring was straightforward, with synonyms receiving one point and partially correct answers (e.g., **flower** for **plant**; **thief** for criminal) receiving half a point. The data were analyzed within an analysis-of-variance framework for crossover designs. All main effects and interactions are associated with one degree of freedom, and so they are reported more simply as *t*s here. Strategy and strategy-order effects were assessed via corresponding within- or between-subject tests. Strategy-structure effects were assessed separately for the context and mnemonic lists. Each of the statistical tests was based on 48 error degrees of freedom and a Type 1 error probability of .05.

Overall, subjects remembered statistically more definitions when they used the mnemonic strategy than when they used the context strategy (means of 87.1% vs. 67.8%, $t = 6.38$, $p < .001$), and this effect did not interact with strategy order, $t < 1$ in absolute value. On a subject-by-subject basis, the strategy effect was quite consistent, with 44 subjects of 52 subjects (85%) remembering more definitions with the mnemonic strategy, seven (13%) remembering more with the context strategy, and one (2%) remembering the same number with each. Moreover, when first- and second-list performance was analyzed separately, it was found that mnemonic subjects statistically outrecalled context subjects on both lists, both *p*s < .05.

Although subjects performed somewhat better overall when the mnemonic strategy followed the context strategy (81.6% vs. 73.3%), neither the main effect of strategy order nor the strategy-order by strategy-structure interaction was significant, ts = 1.71 and 1.64, respectively, both ps > .05.

Strategy awareness and use. On the post-learning questionnaire, all but one subject correctly assessed his/her relative performance on the two lists. Ninety-two percent of the subjects attributed their performance to the strategies themselves (rather than to extraneous factors such as list difficulty, practice, or inter-list interference). Finally, some "strategy adherence" data are interesting: On the second list, more subjects reported having "abandoned" the context strategy in favor of the mnemonic strategy than the reverse (58% vs. 27%), $z = 2.26$, $p < .05$.

Consistent with previous findings, these data confirm that a mnemonic vocabulary-learning strategy is more powerful than a semantic-context strategy (e.g., Pressley, et al., 1987), and that college students perceive that power following a comparative test with the competing strategy (e.g., Ghatala, 1986). Whether or not the same can be concluded for less-sophisticated learners, namely academically "at risk" college freshmen, is the topic to which we now turn.

Experiment 2

In contrast to college students, who come to realize the comparative value of two learning strategies following a test experience with each (Pressley, Levin, & Ghatala, 1984), younger students need something more (McGivern, Levin, Pressley, & Ghatala, in press; Pressley, Ross, Levin, &

Ghatala, 1984). In particular, Pressley, Ross, Levin, and Ghatala found that a simple test experience may not be enough for middle-school students to realize that a mnemonic vocabulary-learning strategy is superior to a contextual strategy. In order to produce accurate meta-strategy knowledge, the students had to be prompted to reflect on their comparative recall performance with the two strategies.

In the second experiment, we sought to determine whether underprepared minority college freshmen, like less-advanced students, also require something more than a simple test experience. One "something more" was explicit feedback following each pair of tests than informed students of their relative vocabulary-learning performance with each strategy (mnemonic and context); and a second "something more" was two comparative test experiences, rather than one.

Method

Subjects and design. The participating students were 59 "at risk" minority freshmen who were attending fall orientation-week activities at a major midwestern university. The students were deemed "at risk" on the basis of: (a) their failing to meet regular university-admission standards for both high-school class rank and number and distribution of academic units completed in high school; and (b) university students from this population traditionally exhibiting high rates of attrition and low levels of attainment, compared to their nonminority classmates. The data from students with limited knowledge of English (e.g., those placed in beginning-level ESL classes) were eliminated. The students were given two pairs of 10-item vocabulary lists to learn. Within each pair, one list was accompanied by a provided mnemonic strategy and the other by a provided context strategy. In addition to having to recall the definitions of the vocabulary items from each list, subjects were required to assess the relative efficacy of the two strategies. Two between-subjects factors included: whether or not performance feedback was given following each pair of tests and the amount of experience students received before having to evaluate the two strategies (one or two test experiences).

Materials and procedure. Four 10-item vocabulary lists, which included most of the low-frequency nouns used in Experiment 1, were assembled into booklets. Four different test booklets were constructed to represent the four experimental conditions, as defined by two levels of practice and two levels of performance feedback. The booklets were randomly distributed within each of five sessions that included approximately 12 students apiece.

The sessions began with the experimenter's description (and an example) of two different strategies ("methods") for learning new vocabulary, context ("sentence") and mnemonic ("word clue"). Students were then asked to predict which of the two methods would help them remember more word meanings if they had to learn a list of 10 unfamiliar words in 2-1/2 minutes (15 seconds per word). Responses were made individually on a sheet that included as options **Sentence Method**, **Word Clue Method**, and **Both the Same** (with the order of the first two options switched from one session to the next).

A 10-item list was then read aloud by the experimenter, one item every 15 seconds, while the subjects followed along in their booklet. Provided context sentences (or keywords and suggested interactions) accompanied each vocabulary item. The experimenter then read the randomly reordered test items at an 8-second rate. At the same time subjects were required to fill in the appropriate definitions in their booklets. After a one-minute delay, a second 10-item list was administered. This list was accompanied by the strategy (mnemonic or context) that was not provided on the first list. A second test followed.

At this point in the proceedings, subjects participated in a ten-minute filler task (supervised by an instructor) while the experimenter left the room to score the tests of half of the subjects (i.e., those in the feedback condition). On the first page of the next booklet that these subjects were to receive, the experimenter wrote down how many items they got right on the "sentence" list and how many they got right on the "word clue" list. Instead of receiving feedback on the booklet's first page, subjects in the no-feedback conditions were reminded of the vocabulary words' rarity and were asked to answer a three-option question about their prior familiarity with the words.

In addition to the test results that were given to feedback subjects, on the first page of the next booklet half of the subjects (those in the one test experience condition) were asked to make the same strategy-efficacy prediction that they had initially made. A second round of study-test, study-test (performance feedback) experiences then ensued, followed by a final strategy-efficacy prediction for all subjects. An additional question asked subjects which strategy they would choose (and why) if they were given another list of vocabulary words to learn.

The next day, most of the subjects returned and were unexpectedly tested on the 40 items that they had previously learned. The items were divided into two 20-item tests (each test on one side of a single page) with the contextually-learned items randomly presented in one test and the mnemonically-learned items randomly presented in the other. After completing the two tests, the students were asked to assess on which test they thought they had remembered more word meanings, and why.

Results and Discussion

Definition recall. The recall data were scored as in Experiment 1. On both first-day pairs of tests, items that were learned mnemonically were remembered better than were those that were learned contextually. On the first pair of tests, the means were 74.9% and 59.3%, respectively, $t(55) = 4.86$, $p < .001$; and on the second pair of tests, the means were 80.6% and 67.0%, $t(55) = 4.76$, $p < .001$. On a subject-by-subject basis, across the four first-session tests 47 of the 59 students (80%) remembered more mnemonic items than context items, seven (12%) remembered more context items, and five (8%) remembered the same number of each. The two experimental manipulations (performance feedback and test experience) were not designed to affect students' recall, and on neither occasion was there a significant contribution of those factors either as main effects or as interactions with the strategy effects, all $ps > .05$.

The just-reported statistical outcomes were duplicated in the one-day delayed recall data, albeit at a lower level of performance. Mnemonically-learned items were remembered better than contextually-learned items, with means of 48.0% and 35.4%, for mnemonic and context, respectively, $t(51) = 4.86$, p .001; and there were no feedback or test-experience effects, all $ps > .05$. Thirty-eight of the 55 returning students (69%) recalled more mnemonic than context items, 14 students (25.5%) recalled more context items, and three students (5.5%) recalled the same number of each.

Strategy awareness and use. One of the major questions of interest was the change (if any) in subjects' perceptions about which of the two strategies, context or mnemonic, is more effective for remembering the definitions of new words.

In particular: (a) What are students' initial perceptions, and would their later perceptions come to match their recall performance? (b) Would providing explicit performance feedback hasten that change? (c) And is more than one test experience necessary to bring it about? When initially asked which of the two strategies they thought would be more effective, 38% of the students opted for the mnemonic strategy. After the students were able to compare the two strategies in actual study/test situations, however, the percentage rose to 75%, a significant change, $z = 3.77$, $p < .001$.[3] Interestingly, neither performance feedback nor the number of strategy-comparison tests experienced affected subjects' perceptions, $z = 1.23$ and 1.08, respectively, $p > .05$ in both cases. Finally, at the end of the first session, subjects were asked which of the two strategies they would use if given a new list of vocabulary words to remember. Eighty-three percent selected the mnemonic strategy, which represents a percentage significantly above chance, $z = 5.08$, $p > 001$.

Summary and Conclusions

What we found in this study should not really surprise those who have followed the literature on mnemonic vocabulary-learning strategies over the last decade. Our findings may, however, surprise reading educators and reading researchers who have advocated the use of semantic vocabulary-learning strategies, including the popular semantic-context strategy (see, for example, Johnson, 1986; and McKeown & Curtis, 1987). Some believe contextual analysis to be beneficial as a vocabulary-inferring strategy (e.g., Sternberg, 1987), but those beliefs can be challenged on grounds of potential misunderstanding or misinferring (e.g., Pressley et al., 1987; Schatz & Baldwin, 1986). With specific regard to vocabulary remembering, the present experiments serve to bolster conclusions about both the **utility** of mnemonic strategies and the **futility** of contextual strategies, for well-functioning students (Experiment 1) as well as for students who are academically underprepared (Experiment 2). Additional content-area (e.g., science, social studies) vocabulary-learning research is required, however, before the classroom utility of mnemonic strategies can be properly assessed (Levin, 1985).

Thus, from a cognitive standpoint, mnemonic vocabulary-learning strategies are certainly worth remembering. From a metacognitive standpoint, it is worth remembering that the students in both experiments came to believe in the utility of the mnemonic strategy following a single comparative experience with the context strategy. In Experiment 1, it made no difference whether the strategies were implemented by the experimenter (provided) or by the students themselves (generated). In Experiment 2, it made no difference whether students were allowed one or two comparative test opportunities. Neither did it make a difference when the students were given explicit performance feedback by the experimenter.

As has been found in previous studies with college students who are not "at risk" academically, most of the present "at risk" students required a single comparative study/test encounter with two competing learning strategies before the mnemonic strategy surfaced as more effective. In most cases, as well, this likely came as quite a shock to students' belief systems, which we believe are firmly entrenched in a pro-semantic bias. At the same time, it must be realized that semantic entrenchment is not endemic to underprepared learners. As has been indicated throughout this paper, the same beliefs about effective vocabulary-learning strategies are easy to detect among reading educators and reading researchers as well.

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Footnotes

1. Readers are advised to review the studies cited by Stahl and Fairbanks (1986) paying particular attention to the various instructional arrangements (e.g., the methods used to assign students and/or classes to experimental and control treatments, the specific instructional activities included in each treatment, the amount of instructional time allotted to each), as well as to the dependent measures selected to reflect vocabulary "learning." They then should arrive at their own conclusions.
2. Internal context strategies represent an exception to this statement insofar as such strategies can elaborate the definition per se (understanding), while at the same time strengthening the relationship between the new word and its definition (remembering).
3. The change is almost identical for the 47 students who actually remembered more items with the keyword strategy and for the 12 students who did not.

Contributions of Empirical Studies to College Reading and Study Skills Instruction: 1975-1989

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One of the reasons for conducting empirical research in the area of college reading and study skills is to provide insightful aids that may assist instructors with the development of appropriate instructional strategies to be used in classrooms with college students. A cursory review of some studies suggested limited instructional aids. That review prompted us to investigate the necessity of empirical studies in college reading and study skills as they relate to instruction. Our question is, what has instruction in college reading and study skills gained from empirical studies?

We decided to limit our examination of the question to studies that were conducted between 1975 and 1989. We felt that studies from the past 14 years would yield enough representative data to draw reasonable conclusions. Secondly, we recognized the possibility that some studies would be missed despite the thoroughness of our attempt. In order to be as inclusive as possible we selected journals that are frequently read by college reading and study skills instructors as well as studies contained in the ERIC/RIE/CIJE files. Since we teach college reading and study skills classes, we limited our ERIC/RIE/CIJE "search terms" to college, reading, study, and skills. Only studies from ERIC found with these search terms were used in this investigation. Also, the studies that were found had to be referenced in professional journals. Only empirical studies were selected. Additionally, we looked for described instructional procedures or lessons designed for students, informal and standardized measures, identified teaching skills, and identified instructional techniques.

Method

A perusal of professional journals and the ERIC files yielded 27 studies to be examined. For ERIC, first we obtained a summary of each citation that appeared to be an empirical study. Next, we went to the primary source for a thorough examination. Our examination of studies from journals and ERIC included answers to the following questions:

1. What is the source (bibliographical data)?______________
2. How many subjects?______ Control______Experimental______
3. How much time was allotted for study (cite semesters, weeks, etc.)?________
4. What tests were used?_________________________________
5. Were tests standardized? Yes___ No___
6. What skills did author name?___________________________
7. Were instructional procedures described? Yes____ No___
8. Did author indicate how to teach skill? Yes____ No____

Data from questions one through seven were summarized to provide pertinent information relative to each study. A box score procedure (Kamil, Langer, & Shanahan, 1985) was used to analyze the data from question number eight. With this procedure researchers are expected to devise a yes and no question. Thereafter, a selected set of studies are examined to answer the question as yes or no. In this study we had to examine approximately 350 sources (published papers) in order to find empirical studies that contained answers to our question. Next we read the studies and answered the question. The value of this procedure is that it is effective in helping to reach decisions about selected areas of research.

Limitation

Our number of identified studies from the past fourteen years was somewhat limited by the "search terms" used for the ERIC files. We recognize that more terms may have yielded more studies for our analysis. Overall, we feel that the 27 studies are representative.

Results

Results show that publication dates for the studies ranged from 1977 to 1989. The number of subjects ranged from 14 to 240. We judged that appropriate instructional procedures had been given to students in all studies except for Katz & Wright (1977-88). We found that no time frame had been indicated for 30% of the studies. Standardized tests were used in 48% of the studies. Overwhelmingly, informal or teacher made tests were used to evaluate outcomes of the studies. Collectively, 21 different skills were named by the researchers throughout the studies (Table 1). Researchers of nine studies named two or more skills each; others named one each. Specifically, 33% of them named reading comprehension; 19% named study skills; 7% each named vocabulary and self-questioning; remaining skills such as writing, notetaking, time management, etc. were named once in individual studies. Finally, a summary of studies that have contributed to instruction in college reading and study skills is presented in Table 2. We found that researchers in 21 (78%) of all studies suggested instructional techniques.

Table 1

Subjects, Time of study, Tests, Skills named

Authors	Subjects		Time	Tests		Skills Named
	C[a]	E[b]		S[c]	I[d]	
Crist & Petrone (1977)	35	35	--	--	.Informal	.vocabulary
Katz & Wright (1977-78)	75 (2 groups)		4 sem[e]	--	.Informal	.study skills
Riley & Dyer (1979)	52 (4 groups)		--	--	.Informal	.notetaking
Kersteins & Tyo (1983)	55	55	1 sem	ND[f], DRP[g] MCE[h]	--	.reading comp. .reading rate .study skills
Gibson (1983-1984)	8	6	16 wks[i]	ND	--	.reading comp.
Trennepohl & Heerman (1983-1984)	38	36	16 wks	ND, WGCTA[k]	.KSRAS[j]	.reading comp.
Wells et al. (1983-1984)	33 (3 groups)		16 wks	--	.Informal	.reading comp.
Anderson & Aspden (1984)	25	25	1 sem	SDRS[l]	.Informal	.spelling

Table continues

Subjects, Time of study, Tests, Skills named

Authors	Subjects		Time	Tests		Skills Named
	C^a	E^b		S^c	I^d	
King, Biggs, & Lipsky (1984)	10	77	1 sem	ND	--	.self-questioning .summarizing
Wilhite (1984)	52	52	1 sem	WRAT^e	--	.Questioning strategies
Snyder & Jackson (1985)	7	18	1 sem	--	.Informal	.reading logical thought units
Hearman (1985-1986)	53	54	9 wks	ND	--	.writing
Ackerman (1986)	120	120	--	--	.Informal	.retrieving episodic information from memory
Elliott & Fairbanks (1986)	24	30	1 sem	--	.Informal	.reading comp. .study skills
Simpson (1986)	95	46	2 sem	--	.Informal	.study skills .metacognition
Blanchard & Milkkelson, (1987)	84 (3 groups)		--	ND	--	.underlining as a study strategy
Carrick (1987)	18	18	--	--	.Informal .Social Dialect	.reading skills .reading comp.
Cronan (1987)	84	89	--	ND	--	.reading rate .reading comp.
Loewenthal & Pons (1987)	9	54	1 sem	MA^f	--	.anologic thinking
Maring, Sheu, & Warner (1987)	60	60	--	--	.Informal	.time management .test taking .reading strategies
Greenbaum, Chambers, & Crawford (1987-1988)	35	37	2 yrs^e	--	.Informal	.cognition
Jeremiah (1987-88)	10	20	1 sem	ND	--	.reading comp.
Carr & Mazur-Stewart (1988)	25	24	1 sem	SD^g	.Informal	.vocabulary .overview
Craik & Martin (1988)	24	53	5 wks	--	.Informal	.reading comp. .study skills
Feeley & Wepnew (1988)	15	11	1/2 sem	SD	--	.reading rate
Simpson et al. (1988)	32	33	3 wks	--	.Informal	.PROPE^e study strategy
Hayes (1989)		31 (3 groups)	--	--	.Informal	.composing .self-questioning .summarizing

Table continues

Subjects, Time of study, Tests, Skills named

Author	Subjects		Time	Tests		Skills Named
	C[a]	E[b]		S[c]	I[d]	

Key

[a]C = control group. [b]E = experimental group.

[c]S = standardized tests. [d]I = informal or teacher made tests

[e]E = semester. [f]F = Nelson Denny Reading Test.

[g]DRP = Degrees of Reading Power. [h]MCE = MN Cooperative Eng. Tests.

[i]wks = weeks. [j]KSRAS = Kansas State Reader Attitude Scale. [k]WGCTA = Watson Glazer Critical Thinking Appraisal. [l]SDRS = Spache Diagnostic Reading Scales

[m]WRAT = Wide Range Achievement Test. [n]MA = Miller Analogy. [o]Yrs = years.

[p]SD = Stanford Diagnostic Reading Test. [q]PROPE = Predict, Organize, Rehearse, Practice, Evaluate.

Table 2

A summary of findings with respect to the question: Have studies contributed to instruction?

Studies indicating instruction (N = 21)	Studies indicating no instruction (N = 6)
Crist & Petrone (1977)	Katz & Wright (1977-78)
Riley & Dyer (1979)	Wilhite (1984)
Craik & Martin(1980)	Elliott & Fairbanks (1986)
Kersteins & Tyo (1983)	Simpson (1986)
Gibson (1983-84)	Maring, Sheu, & Warner (1987)
Trennepohl & Heerman (1983-1984)	Hayes (1989)
Wells, Bean, Yoop, & Mend (1983-84)	
Anderson & Aspden (1984)	
King, Biggs, & Lipsky (1984)	
Snyder & Jackson (1985)	
Heerman (1985-1986)	
Ackerman (1986)	
Blanchard & Mikkelson (1987)	
Carrick (1987)	
Cronan (1987)	
Loewenthal & Pons (1987)	
Greenbaum, Chambers, & Crawford (1987-1988)	
Jeremiah (1987-88)	
Carr & Mazur-Stewart (1988)	
Feeley & Wepnew (1988)	
Simpson, Hayes, Stahl, Conner, & Weaver (1988)	

Conclusion

What has instruction in college reading and study skills gained from empirical studies? Our analysis of 27 studies showed that reading comprehension and study skills were the most researched areas. Additionally, there seemed to have been a slight trend towards reading and study skills instruction that involved vocabulary, self-questioning and summarizing, and metacognition. Even though all are important, more research, with instructional components, that expand the latter three areas would be very useful to instructors of college reading and study skills courses.

One conclusion, however, that researchers have focused mainly on reading comprehension and study skills with less attention to other areas was revealing. From this study we determined that writing (Heerman, 1985-1986), spelling (Anderson & Aspden, 1984), metacognition (Simpson 1986), and notetaking (Riley & Dyer, 1979) had been named in separate studies as a research focus. We feel that additional study of these areas would not only broaden the research base, but would provide instructors with necessary knowledge and skill needed to instruct college students. Finally, our study's limitation has caused us to recommend a modified replication of this study that could include such "search terms" as reading and study methods, strategies, techniques, and approaches. Also, journals that contain college reading and study skills literature should be examined closely. We know that additional research has been conducted, however, it did not surface through the research technique used in this study.

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